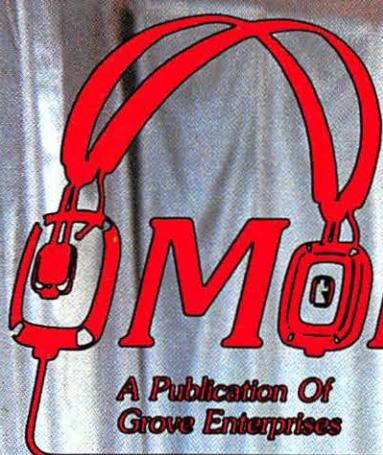


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A Publication Of
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MONITORING TIMES

VOICE OF JUNE 4TH

Chinese students speak out
on shortwave

Your
Convention
Schedule



MILSPEAK
A Top Gun
Dictionary

HARNESS
THE SUN
Solar Power for
Your Radio

EXPLORE
RADIO'S PAST
National Broadcast
Museums



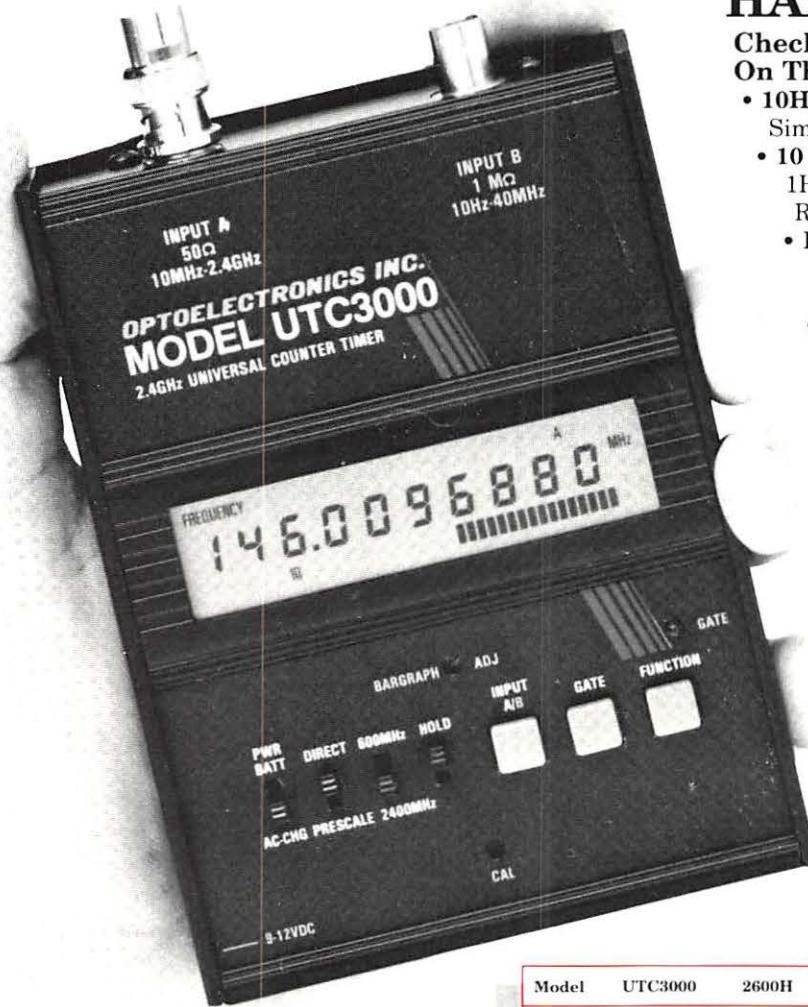
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OPTOELECTRONICS



UTC3000

PERIOD AVERAGE A
440897.13
1000 15

Period Average Mode

FREQUENCY PERIOD RATIO INTERVAL AVERAGE PRESCALE OVERRANGE A-B
8.8.8.8.8.8.8.8.8.8.8.
0.01 0.1 1.0 10.0 100.0 LOW BATT 
Display Showing All Annunciators

Display Showing All Annunciators

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Model	UTC3000	2600H	2210	1300H/A	2400H	CCA	CCB
Function	Freq. Period Ratio, Interval, Avg, Prescale	Frequency	Frequency	Frequency	Frequency	Frequency	RF Indicator
Range	10Hz- 2.4GHz	10MHz- 2.4GHz	10Hz- 2.2GHz	1MHz- 1.3GHz	10MHz- 2.4GHz	10MHz- 550MHz	10MHz- 1.8GHz
Display	10 Digit LCD w/Function Annunciators	10 Digit LCD	8 Digit LED	8Digit LED	8 Digit LED	8 Digit LED	•
RF Signal Strength Indicator	16 Segment Adjustable Bargraph	16 Segment Adjustable Bargraph	•	•	•	LED with Adjustable Threshold	10 Segment Adjustable Bargraph
Price	\$375.	\$325.	\$239.	\$179.	\$189.	\$299.	\$119.

Sensitivity: <1 to <10mV typical. Time Base: $\pm 1\text{.ppm}$; $\pm 5\text{ppm}$, add \$75 - LED Models; $\pm 2\text{ppm}$ add \$80. - LCD Models. Nicads & AC charger/adapter included. (9v Alkaline - CCB.) Carry Case, Antennas and Probes extra. One year parts & labor warranty on all products.



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MONITORING TIMES

June 1990

The Voice of June 4th

6

The disastrous events of June 4th, 1989, on Beijing's Tiananmen Square caught the world by surprise. It also caught a large number of Chinese students studying abroad feeling stranded and useless. *MT* profiles one group that decided to do something. In a valiant effort to broadcast into Mainland China an opposing point of view, an alternative to the government line, these students have organized the fledgling station "The Voice of June 4th."



Milspeak: A Primer by Steve Douglass

10

"White rockets are great for learning how to tap somebody, but you'll need your speed jeans!"

What??! If listening in on military comms leaves you wondering if you've tuned in to the USAF or the Australian outback, let Steve Douglass begin to unravel some of the jargon for you.



Faces of Nicaraguan Radio by Bill Black

14

The battle between the Sandinistas and the UNO party is over with the elections -- or is it? In some respects the propaganda battle on the airwaves has just begun, now that government control has relaxed and the competition for popular opinion is heating up. Bill Black, registered as a member of the press -- *Monitoring Times!* -- brings back a photo-review of the faces of radio in Nicaragua.

Solar Power for Battery Charging by Doug DeMaw

18

We've written a lot over the past few months about natural disasters and how invaluable radio can be in an emergency. The point drummed home by both authors and readers has been, "What good does it do to have your radios and your frequency lists if your batteries are dead?" *MT*'s homebrew expert, Doug DeMaw, will rescue you from this particular crisis with solar power!

Four Must-Visit Broadcast Museums by Everett Slosman

20

Ev Slosman gives a preview of four broadcasting museums, each offering something truly unique in the history of broadcasting.



ON THE COVER: *The Voice of June 4th* studio
Inset: F-14 Tomcat (Steve Douglass)

And more ...



"Magic in the Attic" is the way Karl Zuk describes WDFH, a quality station broadcasting from the attic of a law student in Dobbs Ferry, New York, via cable television! Turn to page 50 to see how Marc Sophos' ingenuity produced the magic.

If you're going on vacation and you feel a little uneasy about leaving the house unattended, you've got good reason. Your personal statistics -- address, phone number, credit card number, driver's license, travel plans -- may be more public knowledge than you'd like to think. Check out Bob Kay's column on page 32 to see what you can do to protect yourself.

receivers reviewed this month are the Sony ICF-SW7600 portable shortwave receiver (p. 86) and the AOR AR-1000 handheld scanner (p. 88). Both units receive fairly favorable treatment at the hands of our tough critics! Bob Grove adds a bonus -- a run-down on the diodes in the PRO-2022 and how to restore the cellular frequencies!

If you're really courageous (and/or qualified) why not double the scan speed of your ICOM R-7000? Rich Arland walks you through the process on p.94.

In this issue you'll find articles on radio from the lowest frequencies to the highest satellite transmissions, from yesterday's technology to tomorrow's. You'll find program and frequency details for the coming month, and more details on the up-coming *Monitoring Times* radio convention in Knoxville. Stay tuned!

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LETTERS

Back in April, we mentioned an item from the syndicated "Heloise" column in which the author relates how scanners played a role in getting her house burglarized. It seems that every time the writer went away on vacation, the police dispatcher would use the radio to remind one of the patrolmen to "check on that empty house at XYZ address."

William Quigley of Ottawa, Illinois, reports a similar situation, this one taken from personal experience. "Prior to my retirement from A.T.&T.," says Bill, "I traveled a great deal in the Central Midwest. One day, about fifty miles northwest of Madison, the state police had pulled over a speeder.

"In Wisconsin you can post bond or pay a fine with a credit card. And the person who was stopped for speeding elected to do this. The trooper read the credit card number over the air, not once but twice, and even included the name, address and birthdate of the cardholder.

"I heard the whole transaction on my scanner and had I been so inclined, could easily have copied the information down. I wonder if they have some type of code that they use to disguise the true number of the credit card. More food for thought..."

Bill closes by saying that "I think that [Monitoring Times] is just great."

Thanks, Bill. We're glad you enjoy *MT* and that you passed along that bit of information.

"It's airshow time!" writes Robert Di Corcia of Franklin Park, New Jersey. "I just received a copy of the U.S. Navy Blue Angels flight demonstration schedule and you might want to share it with the readers of *Monitoring Times*."

Thanks, Bob. Here it is:

June

2-3 Harrisburg, PA
9-10 McConnell AFB, KS
16-17 Portland, OR
23-24 Rancho Murieta, CA
30-1 St. Louis, MO

July

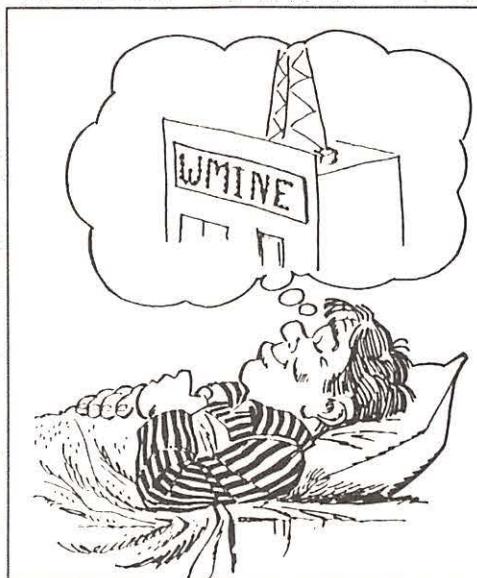
7-8 Kalamazoo, MI
14 Pensacola Beach, FL

21-22 Wurtsmith AFB, MI
28-29 NAS Miramar, CA

August

4-5 Seattle, WA
10-12 Abbotsford, Canada
18-19 Glenville, NY
25-26 Pittsburgh, PA

We're planning on running Bob's report on monitoring the Blue Angels in the next issue of *MT*. Look for it!



"Are you the type of person who would put a big banana split in front of someone on a diet? Would you offer a can of sweet soda to a diabetic? Well, in the American BandScan column, you make me read a list of radio stations for sale." So complains Mike Femyer of Phoenix, Arizona.

"I'm being half serious about this," continues Mike. "There are probably a lot of readers like me that start drooling at the mere thought of owning an actual radio station. Unfortunately, there are other things to think about before looking at the purchase price of a station, like expenses, etc., etc."

"While the items you list are incredibly tempting, I feel that you should add a disclaimer every month that mentions the other items to think about before actually bothering these people with useless, unrealistic offers."

Mike, I'm like you -- one of those

people who loves the idea of owning a radio station. And I share your frustration sometimes. But we're not here to frustrate or to tempt you cruelly. What we're doing, Mike, is giving you grist for your dreams. May yours come true some day.

Here's an idea. We get this kind of letter from time to time. So let's do this. How many *MT* readers would like to own their own radio station? Could we put a large enough group of people together so that the per-person investment would be affordable to the average guy? Interested? Drop us a note in care of "Letters" and we'll look into it. It could be interesting.

Attorney Jeff Elson of Brookfield, Missouri, writes to advise us of a case involving Radio Frequency Interference, or RFI. The case was Smith vs. Calvary Educational Broadcasting, 783 S.W.2d 533 (Mo. App. 1990) wherein the Missouri Southern District Court of Appeals upheld the dismissal of an action filed by individuals seeking an injunction to prohibit FM station KOKS from emitting harmful interference to domestic electrical appliances. According to Jeff, it is "the only reported Missouri case involving this issue."

The defendant successfully argued that federal law preempted Missouri law in regard to RFI and since the issue was decided on the narrow ground of preemption, the court was not required to address the susceptibility of the plaintiff's equipment to RFI, field strength of the RF generated, causes of interference, design and RF immunity of the particular devices, etc."

As Jeff says, "I believe [that] the plaintiffs and defendants would have been better served by seeking engineering ... assistance in curing their problems [instead of] resorting to time consuming and expensive litigation."

Thanks, Jeff.

William Heine Jr. checks in from his location in Taejon, South Korea. "I'm a counterintelligence agent with

[Please turn to p.100]

COMMUNICATIONS

FCC Acts to Clean Up AM Band

The FCC has begun a crusade aimed at saving AM radio. The Commission, in a series of unanimous decisions, voted to adopt a series of engineering changes that include opening the new 1605 to 1705 kHz frequency range to new stations and weeding out AM's overgrown garden over the next ten years.

Under the new proposal, the Commission would urge 25 to 30 existing AM stations nationwide that are causing the most static to move to the new expanded band area.

Other changes would be to allow stations to negotiate among one another to reduce interference, ease multiple ownership rules to allow licensees to own AM stations with overlapping signals, a possible ban on AM-FM simulcasting (where an AM station simply rebroadcasts the programming of its FM sister station) and a change in the way stations calculate their nighttime signal.

The FCC's action drew immediate praise from the National Association of Broadcasters (NAB) which called the proposals "sweeping and historic."

A New Broadcast Band

While the Federal Communications Commission has been working on ways to save AM radio, a consortium of European governments has been working on an all new way of broadcasting called DAB. DAB stands for Digital Audio Broadcasting and it is to radio what the new super-sharp, wide-picture High Definition Television is to TV.

DAB uses an exotic modulation scheme known as COFDM or Coded Orthogonal Frequency Division Multiplex. Stations will use only a few watts of power with fill in or repeater transmitters using as little as a quarter of a watt.

According to experts, DAB will require new spectrum allocations -- a problem that will need to be settled before the end of the century. In fact, claim the experts, "it won't be long before we will get into our cars and turn on a radio that has AM and FM

bands and also a digital band. Ten years after that," they say, "AM and FM will disappear entirely."

Private TV Station Signs on in Poland

Eight entrepreneurs with a handmade transmitter, satellite dish and broomcloset studio, have taken to the air as the first private TV station in Eastern Europe.

"You might say that we made a little mess [of the government's monopoly on TV]," smiled Marek Mlynarczyk, general manager of ECHO TV.

ECHO TV broadcasts six hours a night from Wroclaw, Poland, an industrial city some 200 miles southwest of Warsaw. It offers viewers mostly music videos and movies that are pirated off satellite transmissions.

Virtually all of ECHO TV's equipment fits on a table in the corner of a student dormitory room. There are three televisions, two videocassette recorders, a personal computer and a special effects mixer. The transmitter is only slightly bigger than a breadbox. Another corner three steps away serves as the set for the five-minute news program. The foot-square logo is cut from paper.

"Polish TV is too serious," says Mlynarczyk, "...a lot of guys sitting in arm chairs telling something, blah, blah, blah. We want TV to be more fun."

Radio Hoax Contributes to Father-Son Death

It was like a scene out of some perverted nightmare. The call, on a marine hailing frequency, crackled over the radio at the Coast Guard station on Nantucket Island. "This is the fishing vessel Sol e Mar," a male voice shouted in frenzy. "We're sinking! We need help now!"

The plea then rose to a scream. The transmission was abruptly cut. Then there was only static.

Coast Guard monitors tried to get the caller back to locate the ship and send help. But just a minute after the

first call, another distress signal came in.

"SOS, I'm sinking," a male voice said. And then he laughed.

The Coast Guard, thinking they were the objects of a hoax, did not dispatch rescue planes or ships. Four days later, they discovered that they had been wrong -- to a point. The Sol e Mar, it turns out, really was in trouble. And the father and son team that manned the boat was presumed dead, lost at sea.

"I can't say that the fake call killed them," said Coast Guard spokesman Lieut. Paul Wolf. "But it certainly lessened their chances. It definitely influenced the way we responded."

In 1989 alone, 16 hoaxes were recorded on the coast from Canada to New Jersey and the Coast Guard responded to most of them. So far this year, there have been 11 known hoaxes.

Another Tower Gets In The Way

It seems that an airplane hits a radio tower at least once a month and this month is no exception. In this version of the oft-told story, a single-engine Cessna struck a 300 foot broadcast tower atop a fog-bound mountain in New York. The site of the incident was Illinois Mountain in the town of Highland, about 50 miles north of New York City. The pilot, the only one aboard the plane, was killed.

Toy Microphone Illegal?

Action for Children's Television (ACT) has targeted the Spy-Tech toy line by Tyco. The toy, which features a battery powered directional microphone, is part of a pretend spy kit.

"Part of it is just a pretend spy kit," agrees Peggy Charren, president of ACT. "The problem is that the device works. It's not then a toy; it's an eavesdropping device." Not surprisingly, Tyco officials disagreed.

The Spy-Tech toy, they say, "is far from an illegal listening device." According to B. James Alley, Tyco's vice president of marketing, "the microphone works only if the listener is in the line of sight of the speaker. It's



六四之聲廣播電台 VOICE OF JUNE FOURTH



Almost to the end, the students thought that they could win. There had been seven weeks of nonviolent protest and seven weeks of hope.

It wasn't until gunfire began to echo outside Tiananmen Square that the protesters began to give up. "We can't let any more blood flow," someone shouted over the loudspeaker. "We must leave." Some 1,000 young people, many of them in tears, began to walk out of the square.

At that point, the Army stormed toward Tiananmen -- tanks, armored personnel carriers, and trucks full of troops, all spitting gunfire in all directions. They smashed through the protesters' frail barricades and charged into the

square where they demolished the student's provocative statue, "the Goddess of Democracy."

Angry civilians poured into the streets shouting, "You beasts! You beasts!" The soldiers, in a paroxysm of violence, shot back, killing perhaps a thousand people. In the casualty room of one nearby hospital where blood was inches deep on the floor, one man reported that "They were simply raking the crowd with bullets."¹

The world watched in horror until the Chinese government turned off the pictures.

Among those watching were untold thousands of Chinese students who were studying in the United States and around the world at the time of the massacre. Able to see the events of Tiananmen Square through the eyes of the Western media, they found themselves in the uneasy position of having to get their financing from the same government that was responsible for killing their colleagues on the other side of the planet.

Sanyaun Li was one such person. A political science student working toward his Ph.D at the University of Chicago, Sanyaun found himself drawn into the events of June 3-4 when his wife, Yu Cheng, and their one year old son, did not return as expected from a visit to Beijing. Unable to locate his family, Li turned to the American media for help, appearing in an emotional interview on ABC TV's *Nightline* program.

Sanyaun's wife and son, both of whom were held in police custody on the mainland, did eventually obtain their release. But Sanyaun never forgot the outrage he felt nor the power of the media that he experienced. Together with his wife he decided to set up "The Voice of June 4."

Another student, Huiyun Wang, is now editor-in-chief of VJF. "Before the massacre," he said, "I had been planning to return to China to make my contribution to my country. But after I saw what the government did, I was so outraged that I decided to stay abroad and work against the [Chinese] government."

According to the group's manifesto, The Voice of June Fourth is "a radio broadcast group with a special purpose: to memorialize the martyrs who died on Beijing's Tian Anmen Square..."

"They are martyrs to the cause of democracy in a country governed by old people who put their own interests and power ahead of the people," continues the manifesto. "The corruption and inefficiency of this government," it continues, "are what the students were against. The Voice of June Fourth is dedicated to carrying on the struggle."

Located in a small room on the south side of Chicago, the group of six students began its broadcasts to the People's Republic of China on September 30th of last year. For a short period, during China's National Day celebrations, the students even managed to

be on the air seven hours a day, broadcasting from 5 pm to midnight local time through 27 different frequencies ranging from medium to shortwave.

Today, however, the pace of production is more realistic. VJF now produces a half hour show every day, six days a week. It is heard on medium wave, shortwave and on FM in Boston and Los Angeles. Many of the frequencies are changed often to confound government attempts at jamming.

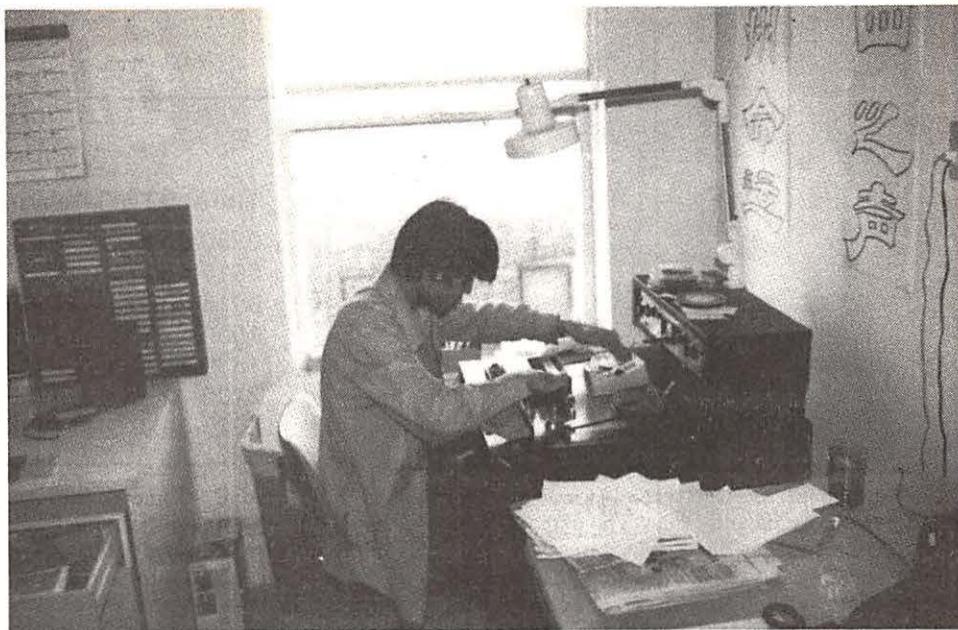
Information for Voice of June 4th broadcasts is obtained from a vast network of Chinese students in the U.S., many of whom write regularly for the station. VJF also collects news from such sources as *The New York Times* and the *World Daily News*, a Chinese language newspaper published in the U.S.

Although the station faces constant financial difficulties, things were much worse in the beginning. When the group first started, they purchased their airtime from a station in Gary, Indiana. The \$3,400.00 price tag bought them a bad time slot -- 1 a.m. to 2 a.m. -- and miserable reception in Chicago. Quickly realizing that the transmission would be ineffective, the group decided instead to pre-record their programs and express mail copies to radio stations in Los Angeles and Boston as well as a "countries bordering China."

"Countries bordering China" play a large role in getting the Voice of June 4th's message to their countrymen on the mainland. Although the group carefully avoids specifying the location of the transmitters that carry their signals, the BBC Monitoring Service indicates Taiwan. Indeed, clues gleaned from Voice of June 4 literature almost point to the island saying that the tapes are "sent abroad to some of China's neighbors" and that "The transmitter is very powerful and located at a place within two hundred miles to China."

That "transmitter" should be plural -- transmitters -- since there are as many as seven frequencies active at once.

Of the 11 frequencies used by Voice of June 4th, 6 -- 750 (100 kw at Minshung), 900 (100 kw at Tanshui), 1100 (100 kw at Tanshui) and 7150 (100 kw), 7250 (100 kw) and 11905 (100 kw) shortwave -- are in regular use by the Taiwan Central Broadcasting System. The CBC is, according to the *World Radio TV Handbook*, "in charge of the broadcasts to the mainland."



六四之聲廣播電台 Voice of June Fourth

Independent Federation of Chinese Students In U.S.A.

1314 E. Hyde Park Blvd. #2
Chicago, IL 60615

Tel: (312) 288-6320
Fax: (312) 288-6840

Manifesto

This is the Voice of June fourth. We are a radio broadcast group with a special purpose: to memorialize the martyrs who died on Beijing's Tian An-men Square June Fourth, 1989.

They are martyrs to the cause of democracy in a country governed by old people who put their own interests and power ahead of the people. The corruption and inefficiency of this government are what the students were against. The Voice of June Fourth is dedicated to carrying on the struggle.

The government controls all sources of information in China. Their story about the last June is the only story most Chinese people could hear. But, they are denying the people of the People's Republic of China even the basic right of neutral accounts of what happened on that fateful day.

We will provide truthful accounts of what happened in Beijing, some from survivors of the massacre. We also will serve as a forum for ideas on where China should direct itself in the future, analyzing important trends in the country and giving alternative views.

Through short daily broadcasts beamed into the country from nearby, the Voice of June Fourth will air news and special features to support China's liberal spirit.

There will be news in Chinese compiled from respected sources. Chinese scholars will offer commentary. We will also report news items on the Chinese who live around the United States and the world which will be of interest to Chinese at home. These broadcasters are China's children. No one, least of all the Chinese government will be able to criticize the Voice of June Fourth for lack of patriotism. Chinese people in China will listen to the station and will know that the speakers' enthusiasm for and faith in the country equals their own.



The station has received reception reports so far from Australia and Japan. The parents of a student studying in the U.S. recently reported hearing the station in Han Zhou, a city in south China. However, a French dispatch mentioned that reception in Beijing was poor.

According to the *China Times Weekly*, it costs the organization \$32,250 each year for equipment, \$75,564 for office and recording equipment maintenance, and \$125,250 in salaries. In order to meet these expenses, donations are solicited from supporters around the world and sent to 1314 E. Hyde Park Blvd. #2, Chicago, Illinois 60615.

The content of the broadcasts can be illustrated by the April 25th French dispatch,

picked up by several Chinese-language papers. It said the new station beaming from "a secret place," covered such subjects as news of Chinese dissidents abroad, a new organization in Paris called the Federation for Democracy in China, the new relationship developing between the U.S. and the U.S.S.R., and the continuing suppression in Beijing and Shanghai.

The personnel of The Voice of June 4 believe that breaking through the news blockade in China is necessary to free their homeland. They feel that their station has a distinct advantage over Voice of America and BBC broadcasts as well. Says Sanyuan, "Our reports are all written by Chinese. They are our own words. And so from the point of

Schedule:

Time UTC	Frequencies
0250-0340	7250 900
0615-0800	11905 7250 900
0915-0955	11905 7150 900
1030-1200	11905 7250 7150 1100 900 750 603
1630-1830	11905 7250 7150 1000 900 750 603
2100-2200	15280
2215-0020	11905 7250 7150 1098 900 747

view of the masses, they have greater credibility. We are their sons and daughters, brothers and sisters."

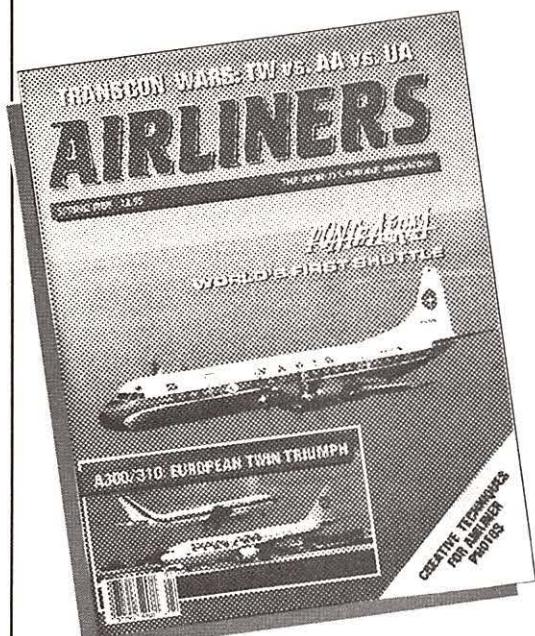
Bette Bao Lord, a prominent Chinese-American author, recalls a telephone call she had with friends in the People's Republic just after the massacre. "For a long moment there was silence. Suddenly sobs. Then silence again before I heard another familiar voice on the telephone. 'A' had obviously given the telephone to 'B.' Unlike her voice, his was controlled, so terribly controlled --

"Warn Americans not to be fooled."

ml

Based on a report in *Newsweek* magazine, June 12, 1989.

You've heard it on the Airwaves, now read about it in



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White Rockets make great hacks, are Sierra Hotel and are great for learning how to Tap someone but you'll need your Speed Jeans if you're gonna go warp one.

Translation:

T-38 jet Talons are good for general flying, are really hot and great for learning air combat tactics, but you will need to wear a G-suit if you are going to go Mach 1.

"Tally ho, I got two bandits at angels ten . . . five miles . . . one o'clock low," the F-15 pilot frantically radios. "No joy, Spook One Five, I don't have them," the wingman transmits. "Rog, now I got'em . . . two Rhinos . . . now at two . . . fight's on. Break right, now."

The twin F-15 Eagles execute a sudden sharp right turn in perfect unison. Pulling six Gs and pressing the fighter pilots down in their seats, the two fighters engage in an air-to-air dance of air combat. Although just an exercise, the combat chatter sounds heated and strained. "I am on his six . . . rattle and tone . . . steady . . . taking the shot . . . Fox One, he's outta there," the cryptic voices shout over the radio.

Military monitors have heard this type of exciting exchange many times. After a while you can figure out what they are saying, but it takes some time. The language used is a strange mixture of military jargon and American slang. It is not unlike surfer lingo or valley girl talk. It is an invention of the military with personal touches added by the pilots themselves. Wouldn't it be nice to have a phrase book?

After talking to pilots of the USAF and Navy, I have compiled a list of the more common phrases that can be heard. Think of it as a translation guide from fighter jock talk to English. It is not complete but it is a start. As you monitor, jot down the phrases you hear. With a little practice you will know the difference between a Turkey and a SLUFF. So let's listen in, jot it down and maybe soon you will be fluent in "Milspeak."

A Glossary of Terms:

AAA or Triple A -- Anti-Aircraft Artillery
Aardvark -- F-111 fighter bomber
ACM -- Air Combat Maneuvering or

'A flight of two 'Electric Jets' on TARCAP protect a 'BUFF' from unfriendly Bandits.'

MILSPEAK

..

A Primer

dogfighting; USAF term is ACT for air combat tactics.

AGL -- Above Ground Level. Pilots try and stay above this.

AICC -- Airborne Intercept Command Communications channel. NORAD uses this freq for air intercepts.

Air-to-ground -- Gunnery or bombing from the air to surface targets. Also known as air-to-mud, moving mud and moving dirt.

Alpha Monitor -- Primary ground station standing by to assist military aircraft on SAC HF frequencies. Also transmits Emergency Action Messages for bombers on alert.

Alpha One, Two, Three -- Alpha One refers to an aircraft in perfect condition. Alpha Two means there are minor faults. Alpha three usually denotes a major equipment failure. Pilots will call these "gripes."

Aurora -- Top Secret hypersonic replacement for the SR-71 Blackbird spy aircraft.

Angle-Off -- The angle between the longitude axis of a defender and line-of-sight



A key to understanding military radio lingo

Story and photos
by Steve Douglass

of an attacker. Example: "I can't get the angles on him."

Atoll -- A Soviet heat-seeking air-to-air missile. Fighters prefer to stay away from these.

AWACS -- Airborne Warning and Control System. Refers to E-3 Sentry and E-2 Hawkeye radar platforms. The guys who fly these are called "Scope Dopes."

Bag -- Flight suit, also known as "speed jeans."

Bandit -- An aircraft identified as hostile, otherwise known as a "bad guy."

Bingo -- Minimum fuel for safe return

Bogey -- An approaching aircraft not yet identified as bad or good. A fighter will electronically "interrogate" the aircraft with his IFF (identify friend or foe) receiver and if set to the right transponder code will ID as friend. Otherwise it's a bad guy.

In the Persian Gulf, a civilian air liner transmitted a military code and was shot down by a Navy Aegis class destroyer, killing all on board. So it is very important to identify the bogey.



Bolter -- Failure by a Navy jet to engage the arrester cable while landing on an aircraft carrier.

Break -- A sharp turn, used to avoid an attacking aircraft or missile. Failure to do so might lead to a real break . . . in your aircraft. Example: "SAM break right."

Also used by refueling tankers to indicate an emergency separation from the refueling probe. Can be used to signal a break in communications for a pause or to get attention. Example: "Break, break, Alpha Hotel on frequency with request."

Burner -- Navy trainer jet. T-2 Buckeye

Buff -- B-52 bomber. Stands for Big Ugly Fat (uh, Fellow). The last initial doesn't stand for fellow, but can't be printed here.

Buster -- Full military engine power without afterburners

CAG -- Carrier Air Group commander (Navy)

CAP -- Combat Air Patrol. There are different types of CAPs. BARCAP: Two fighters positioned between threat and aircraft carrier. FORECAP: Two fighters placed to intercept threat to a strikeforce of bombers. MIGCAP: fighters free to intercept any threat. RESCAP: Fighter to provide protection for downed flier. TARCAP: Fighters positioned to protect a strike force to and from a target.

Check Six -- Look straight behind you. Also a common greeting among fighter pilots.

Clock Positions -- Calls relative to things outside an aircraft made as if nose were 12 o'clock, the tail at 6 o'clock, the right wing at 3 o'clock and left at 9 o'clock. Example: "You have a MIG on your six (6 o'clock)." The aircraft is right behind. Usually the last thing a pilot hears before he is shot down.

Dash Two -- Second ship in a two aircraft formation

Double Nuts -- CAGs aircraft usually numbered 100 or 00

"A Buff loaded with pet rocks can ruin a Gomer's whole day. The best way to bounce him is from his six and unleash a fox, but watch out for his ECM."

Translation:

A B-52 carrying nuclear weapons would be a devastating weapon unleashed on an enemy. The best tactic for shooting one down would be to close up from behind and fire a missile at him, but he can jam most missiles with an electronic counter measure system.

Translation:

A pair of F-16s provide a fighter escort for a B-52 bomber.



The Double Ugly Rhino flown by jocks and Wizzos in Vietnam was engaged in many a Furball but is now being made into Hangar Queens or Drones.

Translation:

This F-4 Phantom was flown by a pilot and weapons officer. It was a potent fighter surviving many multi-aircraft dogfights in Vietnam but is being retired after many years of service. Most will serve as spare parts for other F-4s or used in target practice.

Double Ugly -- Nickname for the much admired F-4 Phantom also known as "Rhino"

Drone -- Remotely piloted aircraft used for gunnery practice

ECM -- Electronic Counter Measures. Jamming or electronic spoofing used to confuse enemy radio or radar.

Electric Jet -- F-16 Fighting Falcon

ELINT -- Electronic Intelligence. The gathering of electronic emissions related to communications, weapons control or reconnaissance.

Feet Wet/Dry -- Aircraft over water or shore

Ferret -- EC-135 aircraft used for gathering signal intelligence. Usually bearing call sign "Cobra."

Fights On -- Signals the beginning of a dogfight

FOD -- Foreign Object Damage. Jet engines can ingest loose objects which can seriously damage an aircraft.

Fox One or Two -- Radio call indicating a launch of a Sparrow (Fox One) or a Sidewinder (Fox Two) missile.

Gas Passer -- Slang for an aerial refueling boom operator.

GIB -- Refers to radar intercept officer in a two-seat fighter, or stands for Guy in Back. Also known as RIO or Wizzo.

Gomer -- Slang for dogfight adversary

Hack -- Any aircraft used for ferrying pilots

Hanger Queen -- Aircraft used for spare parts or a lousy aircraft that seems more time in the hanger than in the sky.

Helo -- Helicopter

Hummer -- E-2 Hawkeye early warning aircraft

IFE -- InFlight Emergency

Knock it off -- Signals the end of a dogfight

Loud Handle -- Ejection seat handle

Merged -- The point at which two aircraft come together

No Joy -- Failure to make visual sighting

Nugget -- New pilot

Nylon Letdown -- Ejection, parachuting

Pet Rocks -- Nuclear weapons. Called this because they are never used, thank goodness.

Poser -- Guy who looks like Tom Cruise in a flight jacket but not worth much else. A put down for a bad pilot.

SAM -- Surface-to-air missile. This call can have any fighter doing a sudden bat turn when yelled over the radio. Also stands for any flight with V.I.P.s on board. Stands for Special Air Mission. Example: SAM 2600 is Air Force One.

Scooter -- A-4 Skyhawk attack aircraft

Sierra Hotel -- Pilot phonetics for "Sh-t hot" the fighter pilot's favorite expression for approval.

SLUF -- A-7 Corsair. Nicknamed Short Ugly Fat Fellow

Speed of Heat (Warp one) -- Mach One, breaking the sound barrier

T-Ts Machine -- Vulgar expression that means a good righteous aircraft. Pilots consider the F-8 Crusader the T-Ts machine of all time. Sorry ladies, but most fighter pilots are male.

T-Ts up -- Broken, not functioning

Trash Hauler -- Cargo or troop pilot

Turkey -- Nickname of the F-14 Tomcat

Tweet -- Nickname for the T-37 jet trainer. Named because of the high-pitched sound the engines emit.

Warthog -- Nickname of the A-10 Thunderbolt Two

White Rocket -- Nickname of the T-38 jet trainer

Whiskey Delta -- "Weak D--K" A pilot who can't cut it. Such a terrible putdown that it is rarely used.

Wingman -- Second pilot in a two ship pair. Responsible for ensuring a leader's six is not shot at.

Wobbly Goblin -- Nickname for the F-117a Stealth fighter

Zulu Time -- GMT International Time



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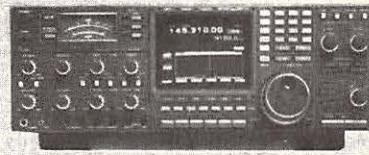
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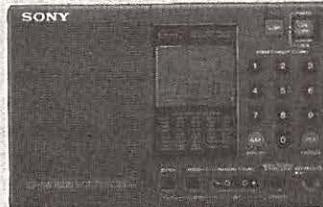


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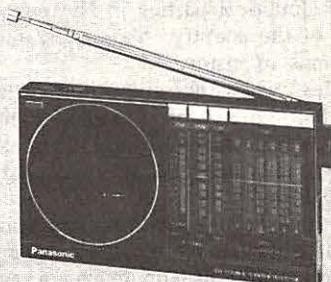


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Faces of Nicaraguan Radio



When it comes to tuning in Nicaragua, being a sharp DXer means more than just having the right schedules and frequencies to tune in. One of the most important skills is knowing how to evaluate what is heard and fit it into the context of Nicaraguan media and its special brand of reporting.

"Objective journalism doesn't exist, not even the pretense of it," comments Jeff Bishop. He is a former California building contractor who moved to Nicaragua in 1985 to help build low-cost housing there. "There's no tradition of it. It's a propaganda war carried out through the news media."

The biases of the journalists come out in a variety of ways. For example, while outside experts are typically called upon for commentary and analysis of the news in the U.S., in Nicaragua, journalists read their own editorials or those of the station's owner. Strong language is often applied to either side of the argument.

"The Sandinistas use the worst adjectives against the opposition," says Jose Castillo, the general manager and co-owner of Radio Corporacion, the leading opposition broadcaster. "They've described the liberals and conservatives [political parties in Nicaragua] as 'sell-outs of the country,' 'mummies,' and 'garbage dumps of history.'

Nonetheless, when the opposition parties talk about the Sandinistas, Castillo admits that "they speak the same language. They use some of the same barbarisms and rudeness to defend themselves."

Some journalists believe that the strong rhetoric and apparent lack of objectivity are long standing traditions for much of the media. "That's a peculiarity of Nicaraguan journalism," comments Jose Esteban Quezada, a reporter with several news programs on Radio Primerisima. Radio Primerisima is one of 17 stations that were confiscated by the Sandinistas and formed into the People's Radio Broadcasting Corporation (CORADEP).

"The radio stations in Nicaragua," continues Quezada, "took that mixture of information and opinion from the newspapers of the 1940s and 1950s."

One Nicaraguan who is well-accustomed to considering the source of a news item is Celso Ascencio, a Managua resident and a supporter of Violeta Chamorro. A university graduate, he was removed from his position as a factory manager by the Sandinistas and now works repairing office equipment.

When Ascencio gets up in the morning, he

usually listens to the 6 a.m. newscast of Radio Corporacion. After that, he often switches over to one of the pro-Sandinista stations "to hear what the party did," he says, "and to make a balance between the two."

Broadcasting, however, like much else in Nicaragua, has undergone many adjustments since the Sandinistas were defeated in the elections earlier this year. The changes have included government authorizations for additional mediumwave [AM] outlets, shifts in station ownership, new news broadcasts on the existing television channels, and name changes for both radio and TV stations. Several groups have also announced plans to start completely new radio and television stations.

For listeners who want to use shortwave to keep in touch with Nicaragua, it can be tough. Due to equipment breakdowns -- made worse by the U.S. embargo on exports to Nicaragua -- and the government budget cutbacks, shortwave broadcasting greatly declined towards the end of the Sandinista's rule in Nicaragua. If you'd like to take on the challenge of receiving news directly from Nicaragua, here are some listening (and reading) suggestions.

La Voz de Nicaragua

"The Voice of Nicaragua" is the official station of the Nicaraguan government. It has passed to control of the new Chamorro government. A number of station personnel who were there during the Sandinista regime have left and begun a new station, "Radio Ya" (Radio Now), currently testing on 600 kHz.

Late last year, La Voz dropped its English-language shortwave programming because of technical problems and a lack of spare parts for the U.S.-made transmitter, reported Freddy Lopez, director of La Voz's shortwave services. At that time, the station's only

by Bill Black

shortwave broadcasts were relays of its Spanish-language programs for four hours in the morning, Nicaragua time, and six hours in the evening. The station, Lopez added, hoped to have its English programming by this spring but that all depended on the plans of the incoming government.

Most recently, La Voz de Nicaragua has been identifying itself as Radio Nicaragua, voice of the new government designated by the Nicaraguan people on 25th February... It has been heard on 6002 kHz and 620 (mediumwave). Also listen for 6100 kHz, another frequency used in the past. It will be interesting to see if the station takes a more objective stance under the new government or remains as partisan as it was under the Sandinistas.

Radio Sandino

Radio Sandino is a private station owned by the Sandinista party, which will retain control of it. The station had once carried shortwave broadcasts in Spanish but in early 1990 was off the air because of equipment breakdowns.

Try listening to 6160 to see if it comes back on. If it does get back on the air, it could provide SWLs with a front row seat on the type of highly partisan radio that Nicaraguans can hear on their local stations.

Radio Zinica

Radio Zinica is an AM station in Bluefields, on Nicaragua's Atlantic coast. It carries programs in Spanish, English, and Miskito, an Indian language. While it sometimes shows up in lists of shortwave stations, it lost its high frequency transmitter and antenna in October 1988 when Nicaragua was hit by Hurricane Joan. At present, there are no plans to resume the shortwave broadcasting.

In the coming months and years, the new Nicaraguan government will try to implement its campaign promises, while the Sandinistas fight to preserve the reforms they brought about. Given the special character of Nicaraguan broadcasting, that struggle could provide some pretty intriguing listening for shortwave listeners who choose to tune in.

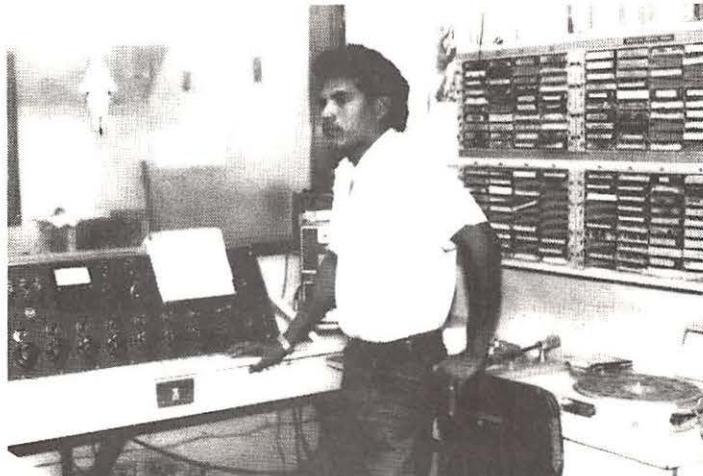
Bill Black is a full-time freelance writer based in Washington, D.C., as well as a shortwave listening hobbyist. He has written articles for the *Washington Post*, *Christian Science Monitor*, and a number of other publications. Fluent in Spanish, he has lived in Mexico and traveled through several other countries of Central and South America.



Radio Sandino belongs to the Sandinista party and is an independent station under the new UNO government of Nicaragua.



Radio Corporacion was the main station that opposed the Sandinistas. The men show the sign for UNO ("one"), the party that defeated the Sandinistas.



Radio Corporacion, like many other Nicaraguan stations, used antiquated equipment because the U.S. trade embargo made it difficult to obtain new spare parts.



Francisco Rodriguez is the director and owner of Radio Reloj. Like many other small stations in Nicaragua, it has been severely squeezed by the country's economic crisis.



Objective news is hard to get; Nicaraguans often rely on sifting through reports from several sources. Here an UNO supporter listens to a Sony shortwave receiver while at a large rally in Managua, Nicaragua's capital.



Radio Corporacion uses this Sony shortwave receiver and the recorder to tape news broadcasts of the VOA and other stations to rebroadcast during its news programs.

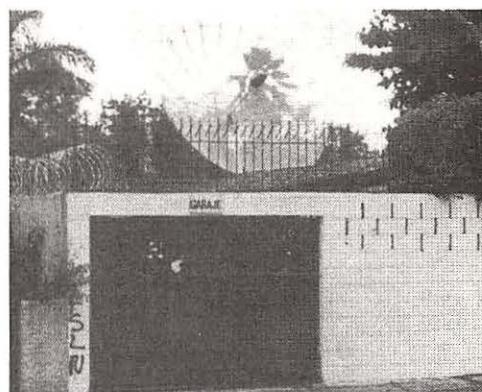




Radio Noticias (left) makes do with antiquated equipment. A few stations such as Radio Catolica (right) have more modern equipment because of donations of materials from sponsoring churches.



Televisions and stereos are readily available in Nicaragua but even a small AM-FM portable can cost half a worker's monthly salary.



Like many other well-to-do Nicaraguans, Violeta Chamorro, Nicaragua's new president, had a satellite receiving dish installed at her home during the Sandinista's rule, so she could see more than just the two government-controlled TV channels.



Security guards use their walkie-talkies while they await the arrival of Daniel Ortega, the Sandinista presidential candidate, at a large rally in Managua a few days before the February 25th elections.



Like many other small stations in Nicaragua, Radio Noticias will make cassette copies for a small fee.



Under the Sandinistas, Freddy Lopez ran the shortwave station of La Voz de Nicaragua.



Danilo Serpa is a newscaster on Radio Noticias, a small, independent station in Managua.



Alberto Carballo is the manager of Radio Catolica, Nicaragua's most important religious station.



Aura Marina de Fuentes and her husband Augustin Fuentes are the owners of Radio Noticias, a small independent station in Managua.



Jose Castillo is the general manager and co-owner of Radio Corporacion, the main station that opposed the Sandinistas.



Jose Esteban Quezada buys air time and hires his own staff for his news programs on Radio Primerisima. It was recently reported he would be directing a new television

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Richard Carlson

Larry Magne

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Workshops will be held in station design, receiver sensitivity and selectivity, (Bring in your rig for a free checkup!) and many, many seminars in almost every aspect of DXing: scanning, shortwave broadcast, ham radio propagation, satellite TV, pirate radio, longwave, and QSL collecting!

Bob Grove



Ian McFarland

Guests will include Richard W. Carlson, Director of the Voice of America, Bob and Judy Grove and Larry Miller of Monitoring Times, Al Weiner of offshore broadcaster, Radio New York International, Ian McFarland of Radio Canada International, Geov Parrish of The M-Street Journal and IRCA, Larry Magne of MT receiver review and Passport to World Band Radio fame, Gerry Dexter of Popular Communications, and most of the columnists of Monitoring Times!

Join in on a special taping of Radio Canada International's Shortwave Listener's Digest or guest DJ on the convention's own carrier current radio station in the hotel on 530 kHz!



Call the Hyatt Regency in Knoxville to book your room today! Mention the Monitoring Times/IRCA convention for a special room rate of \$62.00 a night. And here's a big plus. You can stuff up to 10 people into a room if you wish! Extra roll-away beds are available or bring your sleeping bags! We also have a special discount with Delta Air Lines for convention travel. Just mention discount number "J20088." Be sure to check for supersaver fares and other bargain rates with your travel agent and make your best deal.

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More and more guests and friends are signing up every day, and we'll keep you up to date on the plans! Station tours, bumper stickers, and other door prizes, and bad jokes until it Hertz! CU there!

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 Enclosed as well is my \$18.40 banquet payment (includes Tennessee tax and gratuity)

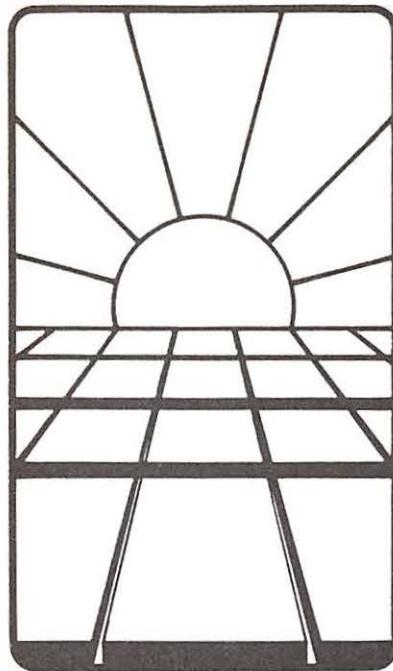
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Address _____

City _____ State/Prov _____ Zip _____

Phone (Optional) _____

Make your check payable to Monitoring Times and send it to P.O. Box 98, Brasstown, NC 28902.



You can power everything from a radio room to an entire home, using *Solar Power for Battery Charging*

by Doug DeMaw

Have you ever camped or vacationed where there was no commercial power for charging the batteries in your portable shortwave receiver or scanner? No doubt you have found yourself in this frustrating situation.

A practical solution for those of us who have NiCd batteries in our radio gear is to employ a small solar panel for charging or topping off the batteries.

Boaters who use 12-V marine systems but do not have alternators on their engines are using solar panels for keeping their batteries charged. I use a 600-mA solar panel on my 16-foot boat with 18-hp engine. I'm able to be away from commercial power for many days without worrying about keeping the battery charged. This article offers some simple guidelines for the use of photovoltaic cells.

How Solar Cells Operate

A single photovoltaic or solar cell produces 0.5 volt of dc in full sunlight. It delivers somewhat less voltage on bright but cloudy days. The cell is made from a thin slice of silicon and has a P-N junction. This structure is similar to that of a silicon small-signal or rectifier diode. The major difference is that the solar diode has a large surface area upon which photons from the sun can impinge to cause the generation of a dc voltage.

Most commercial solar panels contain 36 cells that are connected in series. This type of panel provides 18 volts of dc in full sunlight. The current that can be delivered to the load (battery) is dependent upon the area of the solar cell. The larger the cell the greater the output current. Cells are available for output currents from roughly 100 mA to 1.5 A. Panels may be used in parallel to increase the output current.

Although full sunlight is needed to obtain

the rated voltage and current output from a particular solar panel, it will act as a trickle charger on dark cloudy days. In fact, a solar panel will deliver output even when exposed to a fluorescent light. Figure 1 shows how a solar panel may be used with a battery.

On figure 1, you'll notice a diode, D1. During "dark hours" when the panel isn't producing any electricity, power from the battery can discharge back into the panel and damage it. D1 acts as a one-way gate for the panel. The diode does cause a voltage drop of 0.7, but you need not worry about this. The solar panel will still deliver ample output voltage, 17.3 V, in full sunlight.

Do We Need a Battery?

Although it is possible to use a solar panel directly with a piece of radio equipment, it is impractical. This is because the voltage produced by the panel would change with each passing cloud. Therefore, it's best to connect the panel to a battery (known as a buffer in this case). The battery maintains a fairly constant voltage of known value. In this way, solar systems may be used to power everything from a radio room to an entire home.

Any rechargeable battery may be used with a solar panel. In fact, I have been able to recharge size C and D dry cells with a small solar panel, provided the batteries had not been discharged beyond 1.25 volts. A fully charged dry cell measures 1.5 V.

Is Overcharging a Worry?

It is possible to match a solar panel to a

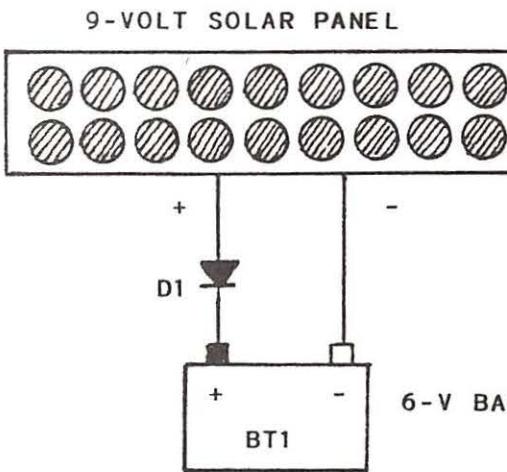


Figure 1 -- Example of a solar panel with 18 cells. Output at peak sunlight is 9 volts, making it suitable for use with a 6-V battery. D1 prevents the battery from discharging into the solar panel during darkness. No regulator is shown with this system.

battery so that overcharging does not occur. By way of example, if your NiCd battery requires a 50-mA charging rate, a 50-mA solar panel may be used without a regulator. A 100-mA panel may still be used in this manner, but quick-charging will result and this always shortens the life of a NiCd battery. Overcharging causes the battery to heat, and this affects the longevity of the battery.

The 600-mA solar panel on my boat does not have a regulator. It has never caused my standard 12-V automotive battery to become warm, despite many hours of exposure in bright sunlight. I would probably not fare as well if I were using a 1.5-A panel.

Plans for a simple charge controller are provided below.

Solar Panel Deployment

If you live in the northern hemisphere you should tilt your solar panel toward the south. The reverse is true if you reside in the southern hemisphere. Maximum photovoltaic energy occurs when the panel is aimed at the sun. Commercial users sometimes use a computer-controlled mechanical tracking

Make a Charge Controller for Your Solar System

system to ensure that the solar panel is always pointed toward the sun. This elaborate set-up is not required for casual applications such as ours. In fact, the solar panel I use on my boat is mounted so that it points straight up.

Most commercial panels have a protective covering over the solar cells. Silicone rubber is used. It allows the UV rays to pass through it (vital) and keeps moisture from reaching the cells. Water damage occurs quickly if the panel is not sealed.

You may construct your own frame if you choose to build a panel from individual surplus cells. Window glass is not suitable for long term use over the cells. This is because glass reacts over time to UV radiation. This causes the glass to filter the UV rays before they reach the solar cells.

I recommend 1/8 inch clear plastic that is UV proof. This material is usually available in lumber yards and building supply stores. It comes in 4 X 4 foot sheets. Use bathtub caulking (silicone) to seal the plastic around the edges of the homemade frame. This will help to weatherproof your solar panel.

Some Final Comments

Use extreme care when soldering wires to your solar cells. A 25-W pencil iron is best for this job. Check one of the cells (under light) with a volt-meter to learn which are the positive and negative electrodes. The cells must be wired in series for the correct polarity.

There are many sources for small inexpensive solar panels. Check the Edmund Scientific Company catalog for 100-mA, 12-V panels. Some automotive parts dealers sell solar panels that are used to trickle charge car batteries. The J.C. Whitney Company at 1917-19 Archer Avenue, Box 8410, Chicago, IL 60680 lists them in its catalog.

A number of firms offer more sophisticated systems. *Solar Futures* (P.O. Box 328, Placerville, California 95667) offers a full-color 62 page catalogue for \$5.00. Another firm, *Real Goods*, has produced an educational catalogue which is available for \$10.00 from 966 Mazzoni Street, Ukiah, California 95482.

Finally, those interested in learning more about solar systems for home power can obtain a sample copy of Home Power magazine from P.O.Box 130, Hornbrook, California 96044. Sample copies are a very affordable \$2.00; subscriptions just \$6.00. In all cases, be sure to mention Monitoring Times.

If your solar panel produces too much voltage, it can damage the battery you are charging. As mentioned above, one way around this is to match the solar panel to the battery. Another way is to produce the simple go-no go protective circuit described below.

Figure 2 shows that when the battery reaches the desired voltage (determined by the setting of R1), relay K1 activates and opens the voltage line from the solar panel to the battery. When the battery voltage falls to the preset level, the relay becomes de-energized and charging resumes. The solar panel must, however, deliver sufficient output current to accommodate the current drawn by the relay. If not, the relay will not operate.

K1 is a small 12-V relay. Choose one that has a field coil with a high dc resistance. For example, a relay with a 500-ohm coil will draw 24 mA at 12 V. Small 12-V relays are available at low cost from Radio Shack and many surplus electronics vendors. The relay contacts

must be rated for the current being delivered to the battery.

R1 is set for relay drop-out when a fully charged battery is connected to the system. When the battery voltage rises above the preset value, Q1 turns on (saturates) and causes the relay to close. This disconnects the solar panel from the battery until the battery voltage falls below the desired value, at which time the relay contacts return to the normally open state and allow the battery to charge.

Zener diode D2 acts as a gate for Q1. It does not conduct until 3.9 volts reaches it through R1, at which time Q1 becomes turned on. The Q1 collector current flows through the field coil of K1 and causes relay closure.

You may wish to include R3 as a status indicator. It is not required in the Figure 2 circuit. D3, when illuminated, shows that the battery is charged. D4 is a transient suppressor that clips voltage spikes which occur when the field coil of K1 is de-energized.

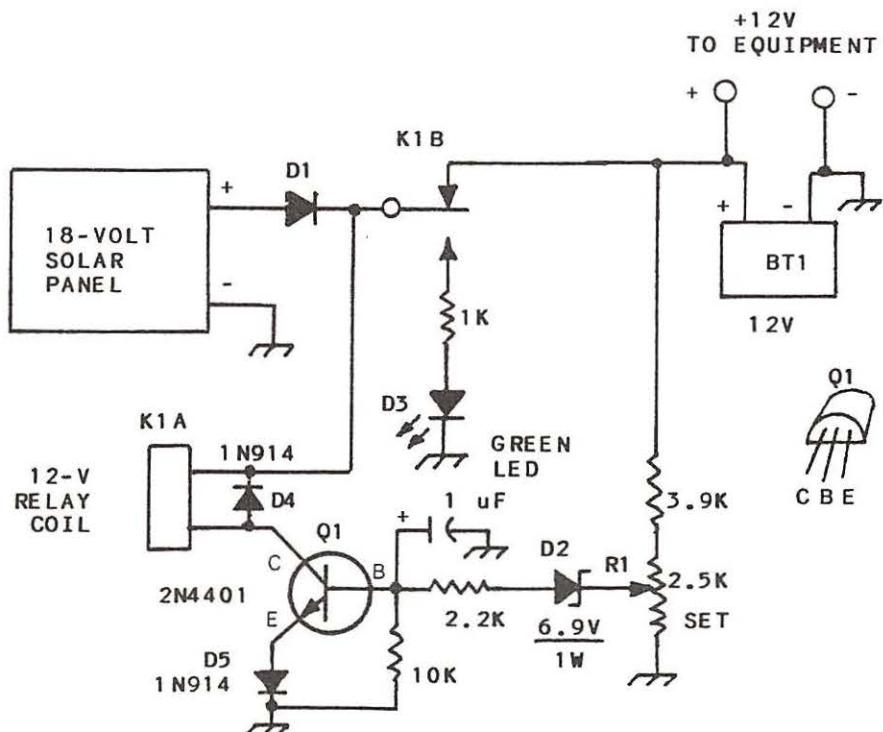


Figure 2 -- Circuit for a solar panel with regulator circuit. The operation is explained in the text. D1 is a 100-V, 3-A rectifier diode. D2 is a 6.9-V, 400-mW or 1-W Zener diode. Fixed-value resistors are 1/4 or 1/2-W carbon film. R1 is a linear-taper carbon composition control. K1 is a low current 12V dc relay. It is shown in the normally open position (not energized). The 18-V solar panel has 36 cells wired in series.

Preserving the Past:

Four Must-Visit Broadcast Museums

by Everett L. Slosman

Almost every North American community supports a historic society or museum where fascinating snippets of local broadcast lore reside awaiting discovery. These mini collections include antique radios, air personality publicity photos, advertisements and other associated items, lovingly preserved by guardians often times more concerned with the donor's ancestry than the utilization and history of the times under their care.

These museums make neat places to spend a rainy vacation afternoon when DXing crackles the phones off your head. But for travelers who want more meat on broadcasting's historic bones, four museums belong on the must-visit list.

Two of these museums preserve a broad spectrum of radio and television entertainment, one traces its roots to an entrepreneur who made a fortune from broadcast technology, and the fourth acts as an antiquities storehouse full of gee-whiz memorabilia.

You can meet a ventriloquist's dummy

that became a top radio personality, tickle a genuine cat's whisker crystal detector set, become the anchor in a TV news program or watch the world's first television broadcasts.

The Antique Wireless Association

We begin in East Bloomfield, New York, the heart of the Finger Lakes wine country. Here, thousands of items collected by broadcast preservations comprise the Antique Wireless Association's (AWA) Electronic Communications Museum. A 150 year old landmark building contains displays honoring Marconi, Armstrong and other pioneers.

There's a replica of an early marine wireless shack; a mockup that drives home the primitive, but effective, technology responsible for tagging shipboard operators with the nickname "Sparks."

Museum members with a ham ticket can sit down at W2AN's 1923 brass key and try their luck tapping out a CQ, while the rest of us have to be content reading the QSL wall.

A mid-1920s store recreates a retail atmosphere where radios and spare parts were as much a part of a mercantile mix as clothing or shoes. Posters on the Golden Age of Entertainment wall have Clara Bow, Shirley Temple and John Barrymore smiling down at a statue of Nipper, RCA's "master's voice" logo.

A slide show on amateur radio's contributions to polar explorations, an extensive vacuum tube collection, and a research library highlight early scientific accomplishments. Pseudo-science is represented by the quack medicine "radiograph" machines, once touted as "electromagnetic cures" for all types of illness.

This museum relies on volunteers like its curator, Bruce Kelley. Now retired from Eastman Kodak in nearby Rochester, he puts an incredible amount of enthusiasm into the AWA.

Finding the museum is easy. Take Exit 44 from the New York Thruway south to Canandaigua. Then take a pleasant 10 mile



Above: Ham station W2AN located at the AWA museum in operation. (Courtesy Antique Wireless Association)

Upper right: Replica of an upstate New York department store's radio department, circa 1925, at the AWA museum. (Courtesy Antique Wireless Association)

Lower right: Golden Age room at the AWA museum. (Courtesy Antique Wireless Association)



drive west on Routes 5 and 20 to East Bloomfield. Admission is free, but donations are appreciated.

The museum is open May through October and during the annual four-day September radio conference. Kelley will send a brochure and additional information if you call him at 716-657-7489. Unfortunately, the 150 year old building does not lend itself to barrier free access for the handicapped.

The Atwater Kent Museum

Philadelphia's Atwater Kent Museum, founded in 1939, preserves and exhibits the cultural and historic aspects of the Delaware Valley region. It is not devoted to broadcasting though Atwater Kent could be the role model of an industry pioneer. Part electronics genius, part flamboyant flake, his name became synonymous, in the 1920s, with in-home receivers.

In the process of establishing the museum, he saved the historic Franklin Institute's old building from the wrecking ball and made it the museum's home.

Kent built one of the world's premier radio manufacturing firms by setting a blistering promotional pace. In one year, he spent the unheard of sum of \$500,000 advertising his receivers. The "Atwater Kent Hour" became the leading popular music program, only costing its creator \$7000 a week to produce and \$3,000,000 a year to promote. This was when \$15 a week take-home was big

money.

The museum makes our list because of a year-long exhibit: "Tune In -- Philadelphia Radio, 1920-1950." It celebrates radio's "Golden Age" by drawing on the museum's own collection and resources from Philco and RCA. An upscale presentation, it illustrates radio's transition from hobby to necessity.

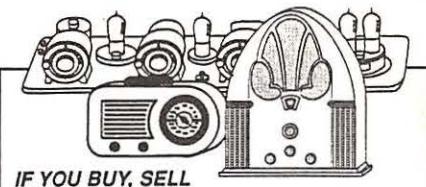
Rare silver gelatin photographs from the area's oldest radio station, WIP, are included. WIP was once owned by Ben Gimbel, a department store tycoon famous for the "Does Gimbel's Tell Macy's" quip.

Over the years, this 5 kW station has seen seven owners and as many formats. Today, they program all-sports, one of the few AMs successful using this formula. So, if you pick up a Phillies, Eagles, 76ers or Flyers home game on good skip night at 610 kHz, send a reception report to Dan Panino, Promotion Manager, WIP, 19th and Walnut, Philadelphia, PA 19103.

The exhibit runs through September 30, 1990. Visit the museum at 15 South 7th Street, open Tuesday through Saturday from 9:30 a.m. to 4:45 p.m. For more information, call 215-922-3031.

The Museum of Broadcasting

New York City is the home of radio and television, so it is only natural that William S. Paley, founder and former chairman of CBS would be the catalyst for the Museum of Broadcasting. In fact, his sponsorship was



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immortalized in *Variety*'s headline -- Paley's Comet.

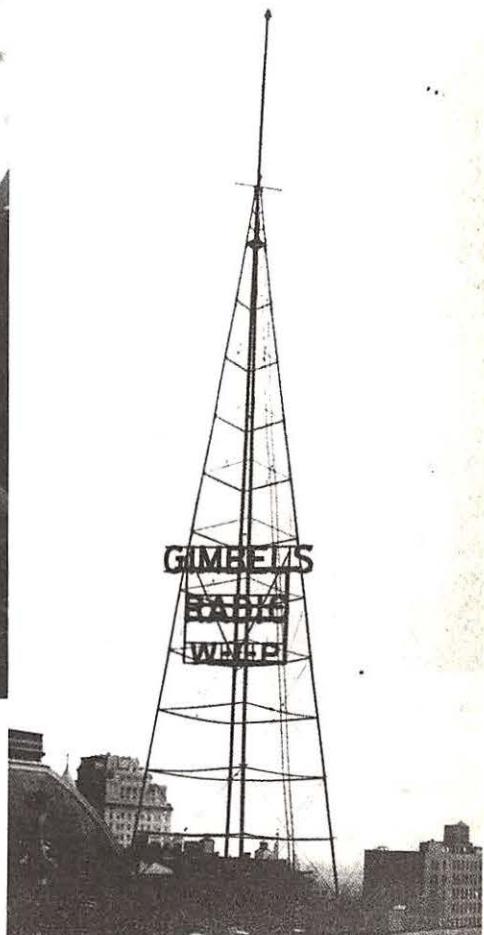
The museum houses 15,000 radio programs, 25,000 television shows and 10,000 commercials. Last winter, they ran a 13 week "Recreating Radio" children's workshop. Using scripts from "Inner Sanctum," "Let's Pretend" and *Dick Tracy*, the kids acted "on mike," ran the sound effects and audio production equipment and experienced radio production at the gut level.

This museum is for the aural and visual senses. You can listen to Franklin D. Roosevelt's early broadcast speeches, shudder at an eyewitness account of the Hindenburg disaster or visualize a German air raid as



*Above: WIP control room in the Gimbel's Department Store. 1924.
(Courtesy WIP radio)*

*Right: Original WIP mast and antenna atop the Gimbel's Building,
Philadelphia, PA. 1924 (Courtesy WIP radio)*



Edward R. Murrow calmly talks about it on "This Is London."

The TV shows most requested by the 100,000+ yearly visitors include the Beatles' appearance on "The Ed Sullivan Show," "Peter Pan," "Howdy Doody" and "I Love Lucy."

Currently located at 1 East 53rd Street, a new barrier free facility will open this fall at 23 West 52nd Street. Hours are Tuesday, noon to 8 p.m. and noon to 5 p.m. Wednesday through Saturday.

Admission is free. However, they expect a \$4.00 contribution from adults, \$3.00 for children and \$2.00 from senior citizens. These are not high prices in the Big Apple, where, as one New York cabbie puts it, "You can't even get mugged in dis town for dat price."

The Museum of Broadcast Communications

Not to be outdone, Chicago offers the Museum of Broadcast Communications; a facility with "Don McNeill's Breakfast Club," "The Kraft Television Theatre," vintage prime time shows and retrospective exhibitions.

The Pierre Andre Memorial Studio, a gift from WGN Radio, commemorates broadcasting's best known "set of pipes." Andre's distinctive voice became the standard for 1940 era Chicago and network announcers. Each Saturday, Chuck Schaden hosts a four hour "Those Were the Days" nostalgia program from these studios.

TV sitcom character Murphy Brown's (Candice Bergen) three wooden siblings, Charlie McCarthy, Mortimer Snerd and Effie

Klinker live permanently in the exhibit dedicated to her radio ventriloquist father, Edgar Bergen.

Highlight your visit by anchoring the MBC newscast where you can do happy talk with your co-anchors, call up remote stories and intro foreign clips. Then, take home your debut on videotape. It's your personal 15 minutes of instant fame for only \$19.95.

Access the museum's program and commercials collection by computer; then enjoy the playbacks on individual consoles in the A.C. Nielsen Jr. Research Center. Among the archives are the "ABC Wide World of Sports" anniversary shows, "Steve Allen Collection" and "National Radio Theatre of Chicago."

Finally, eat in the Sportscaster's Cafe featuring continuous major league game coverage, Chicago hot dogs slathered in ballpark mustard and a sports bar ambience.

The Museum of Broadcast Communication, 800 South Wells Street, River City, is two blocks south of the Eisenhower Expressway. Park adjacent to the museum. The facility has reasonable access for the handicapped.

Open noon to 5 p.m., Wednesday through Friday and Sunday; Saturday from 10 a.m. to 5 p.m. Adult donations \$3.00, students \$2.00, seniors and children \$1.00. Call 312-987-1500 for more information and brochures.

All of these museums sell souvenirs as a way to help fund their activities. So, budget a little extra and bring home a broadcast coffee mug or a David Letterman ball cap as a QSL for your listening post.

OTHER BROADCAST ORIENTED MUSEUMS AND COLLECTIONS

American Museum of the Moving Image, 35th Avenue at 36th Street, Astoria, NY 11106. Telephone: 718-784-4520.

Foothill Electronics Museum, Foothill College, 12345 El Monte Road, Los Altos Hills, CA 94022. Telephone: 415-960-4383.

George Washington University, Washington, DC 20052. Telephone: 202-994-6040.

Library of Congress, Motion Pictures, Broadcast and Recorded Sound Division, 101 Independence Avenue, SE, Washington, DC 20540. Telephone: 202-707-5000.

National Archives, Constitution Avenue between 7th and 9th Streets, NW, Washington, DC 20408. Telephone: 202-523-3000.

National Jewish Archives of Broadcasting, Jewish Museum, 1109 5th Avenue, New York, NY 10128. Telephone: 212-860-1887.

Pavek Museum, 3515 Raleigh Avenue, St. Louis Park, MN 55416. Telephone: 612-926-8198.

UCLA Academy of Television Arts and Science Archives, 405 Hilgarde Avenue, Los Angeles, CA 90024. Telephone: 213-825-3101.

University of Wisconsin -- Madison, Center for Film and Theatre Research, 750 University Avenue, Madison, WI 53706. Telephone: 608-262-3961.

Vanderbilt University, West End Avenue, Nashville, TN 37212. Telephone: 615-322-2561.



Above: Edgar Bergen display at the Museum of Broadcast Communications. (Courtesy MBC)

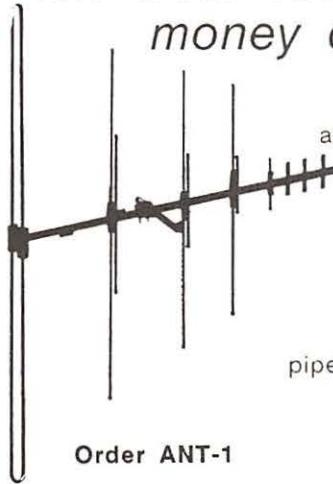
Right: In the control room at the MBC Newscenter as another visitor anchors a newscast. (Courtesy MBC)



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money can buy!*



Order ANT-1

Only \$59.95

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- 6-9 dB gain over other antennas. Continuous 30-512, 800-1300 MHz reception.
- Transmit up to 25 watts on 144, 220 and 420 MHz bands. 50/75 ohms nominal impedance.
- Balun transformer, offset pipe and all mounting hardware included.

Bearcat BC800XLT

Wide frequency

coverage: 29-54, 118-136(AM), 136-174, 406-512, and 806-912 MHz FM with 40 memory channels.



Other Features: 15-channels-per-second scan, 1.5 watt audio amplifier, high sensitivity, sharp selectivity, instant weather reception, brilliant fluorescent display, AC/DC operation, direct channel access, individual channel delay, priority channel, keyboard entry.

Order SCN-11

Retail \$499.95

Only \$249

**\$7.50 UPS or
\$10 U.S. Parcel Post
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Bearcat BC200XLT

Finally, a high performance handheld programmable scanner which includes aircraft and all land mobile bands, including 800 MHz!

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BOMBSHELL AFTER BOMBSHELL:

Bombshell after bombshell: Radio Prague fires all its staff and goes off to reorganize; Radio RSA suddenly decides shortwave is obsolete beyond Africa; but other stations are still expanding, and Radio Earth makes a comeback.

Propagationally, following up last month's item, the Space Environment Services Center predicts that Cycle 22's solar max will have occurred in March with a smoothed sunspot number revised downward to 171.8 (plus or minus 12); but predicted monthly 10.7 cm solar flux averages remain up: June 190, July 210, August 200, September 240, October 230. Read on ...

AFGHANISTAN English at 1830-1930 is on new 4915, a Soviet relay (Julius Hermans, Holland, DSWCI SW News) English at 0930-1030 on 9635 is direct, lacking a relay delay (Valery N Ostroverkh, USSR, *ibid.*) Other frequencies are probably Soviet relays: 0930 on 15350, 17720; 1830 on 11830, 15440 (Nagoya DXers Circle via Radio Australia Japanese *DX-Time*)

ALBANIA The desire for hard currency has overcome Radio Tirana's traditional reticence; they're selling a 10-lesson Albanian language course on cassette for \$20, and transcriptions of their programs for \$5 each. Payment should be in US\$ or "other convertible currency" by registered mail; assume they mean cash, as no specific form of payment was mentioned during this announcement in their 2330 broadcast on 9760 (Paul Brouillet, IL, *World of Radio*) Radio Tirana is really loosening up; for the first time ever, I heard them give the day's high temperature, 18°C, just before closing their German broadcast at 0325 on 9375 (Tim Hendel, FL, *W.O.R.*)

ANGOLA (non?) UNITA clandestine Voice of the Resistance of the Black Cockerel, claiming to broadcast from Jamba in Angola, operates in Portuguese, Umbundo, Kwanyama and other local languages; plus English news some Sundays and Mondays at 0600 and 1300; and French. Schedule is: 0500-0900 on 9700 (alternates 7390, 7145, 7130); 1100-1500 on 11830 (alts. 9850, 9650); 1800-2200 on 7145 (alts. 9850, 7130, 6255, 5060) (BBC Monitoring)

ARGENTINA In February I visited Radiodifusion Argentina al Exterior at its new office location of Maipu 555, Buenos Aires. Our hosts were unaware of how serious the problem of interference is on shortwave, asserting that their directional antennas and high power should overcome it; and unaware that RAE's frequencies are shared by several other broadcasters; and also unaware that their second harmonic on 19380 kHz was getting out. I heard it again immediately after returning to California (Brian R. Webb)

AUSTRALIA Radio Australia proposed to use new 12000 kHz this season, 250 kW from Carnarvon, at 1330-1700 (Bob Padula, *ADXN*) If they can, why not timesignal station VNG, which has been frozen out of its former frequencies after a hiatus?

A million-dollar antenna switcher is to be installed at Shepparton in June (Mike Bird, Radio Netherlands *Media Network*)

CANADA Friday, June 1, at 9:05 pm local (9:35 in Newfoundland), CBC Radio pre-empts *Ideas*, for the *National Radio Awards*, a celebration of excellence in Canadian radio. Main AM frequencies from east to west are 940, 920, 740, 1550, 990, 540, 1010, 740, 690, but DST so far north this time of year means those west of you may not yet propagate by skywave; also try 6160 from B.C. and Nfld. (via Tim Flannery, Ont.)

CHINA Radio Beijing in English to North America: direct on 17855 at 1100, 1200, 0000, 0300; 7405 (this one should be much higher

for summer) at 1400, 1500; relays: Mali at 0000 on 15100, 17705; 0300 on 11715, 15100; Spain at 0300 on 9690; French Guiana at 0400 on 11685; Canada at 0400 on 11840 (frequencies supplied by the station, sites from our previous experience; nice that 15100 and 17705 finally escape interference)

At 0300 via Mali, both 15100v and 11715v pin the S-meter, must be 250 or 500 kW. At 0100 in Chinese, 15099.85 puts strong spurs on 15037 and 15163, but at 0300 it's on 15100.1 with no spurs or very weak ones (Ernie Behr, Ont., *W.O.R.*)

CONGO Brazzaville, inconsistently using shortwave for ten years, heard at 1000 in French with ID as LaVoix de la Revolution Congolaise, on new 15350, a frequency formerly used by neighboring Zaire; 6115 is irregular too (Richard Ginbey, Namibia, *RNMN*) Since then, Brazzaville heard one night only, very strong, testing high power? on 15190 at 0230 past 0500 (Ernie Behr, Ont.)

COSTA RICA After a 9-month hiatus, after leaving WHRI, Radio Earth planned to come back in early May via Radio for Peace International, Saturdays at 2300-2330 UTC on 13660 and 21566 with *Music from Everywhere*. If successful, *The World* may be revived later (Dan Kening, Chicago Tribune, via Murry Beasley, GA) Repeat cycle: UTC Sunday 0430, 1000 on 7375

RFPI has been blocked by very strong CW, RTTY, and other utility transmissions most of the day on 21564, with tactical IDs such as "A3E" and "S3H". These intruders are not images; if not already expelled, can someone monitor content of these and determine source? RFPI says its newsletter for subscribers is being improved and issued quarterly; more info from RFPI, Box 10869, Eugene, OR 97440, for a S.A.S.E.

Radio Impacto heard at 1445 on 6th harmonic of 5044: 30264 kHz (Mitch Sams, KS, *Fine Tuning*)

Radio Lira Internacional, AWR, heard testing one night only on 17559 from 0430, with English ID for 9725 and 11870 at 0507 closing (Mike Fern, CA, *DX Spread*)

CUBA (non) To compensate for jamming on TV and AM, Radio Marti has expanded shortwave to 24 hours, 9525 until 0600, then 6030 at 0600-0930 (Jeff White, FL, *RN Radio-Enlace*) It's disgusting how Marti on SW is ignored in general media hype about the situation.

(very non) Radio Siboney with plenty of Cuban music, anti-Castro talks, at 1935-2015 on 6100.1 kHz; address given as Centro del Pueblo de Cuba, P O Box 450214, Miami, FL 33245 (Vashek Korinek, South Africa, DSWCI SW News) Is or was for Cuban troops in Angola

CZECHOSLOVAKIA (The two ethnic groups feuded over whether to hyphenate this, ignoring our contention that for the next few decades in fairness it should be SLOVAKO-CZECHIA)

With only a few days' notice to listeners and staff, Radio Prague terminated most of its external services at the end of March. The entire staff was fired, but entitled to five months' severance pay. Communists are being purged, and when the station comes back as early as May, output will be much reduced and staffing will reach only 45 percent of previous level. Peripheral languages such as Arabic and Portuguese will not come back, as the station concentrates more on European neighbors. Now's the time to let Pres. Vaclav Havel know that the new Czechoslovakia should continue to be heard in English in North America. During the hiatus, the Interprogram, mostly music, continued at 2300-0055 on 13715 and 6055, as did Czech and Slovak for emigres at 2200-2300 on 13715, 11990, 9540, 7345, 5930 -- the frequencies to czech at the former English times of 0100 and 0300.

And get this: 29 employees of Radio Free Europe have been rewarded by invitations to meet the challenge of broadcasting from

Czechoslovakia (*Sweden Calling Dxers* in French -- not English, RN *Media Network* and *Radio Enlace*, RCI *SWL Digest*, Steve Bohac, NJ, William Westenhaver, PQ)

ECUADOR Some topics planned on HCJB through June: *Dateline 90* (Monday): June 4, sport: legitimate outlet or unreasoning mania? June 11, the rainforest: endangered resource. *Happiness Is* (Tuesday): May 29, Manabi province, sanconcho soup; June 5, Ecuadorian music writer Alfredo Colon; June 12, banana-land, Santo Domingo de los Colorados. *Ham Radio Today* (Wednesday): June 6, what is a ham radio country; June 13, geographical considerations of propagation; June 20, where are we in the 150-year solar cycle? June 27, electromagnetic radiation. *DX Partyline* (Saturday): June 2, Queen Mary's communications, and radio stamps; June 9, review of FRG-8800 receiver; Morocco; June 16, QSLing Latin American stations, and Arthur Cushen; June 23, Vietnam and ANARC, EDXC, SPARC reports; June 30, station news and new products. (HCJB)

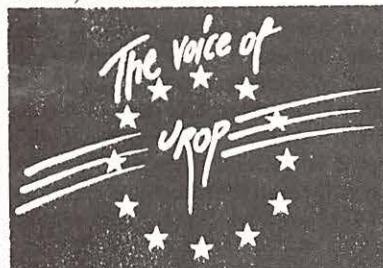
GUAM KTWR has changed English: to Australia from 0830 on 11805; to Far East and Asia from 0800 on 15200; DX program Saturday at 0900, Sunday at 0845 respectively (Arthur Cushen, *RNMM*)

Europirates such as Quality Radio, and Family Radio via Taiwan have been using 15055, but now for the first time the FCC is assigning broadcast stations in this aeronautical band! (gh) KTWR closing Indonesian at 2330 on 15055 (Craig Seager, *Australian DX News*) See also SAIPAN

GUIANA FRENCH RFO heard from 0500 past 0900 on 6385, perhaps a punch-up error for 3385 (Mitch Sams, Kirk Allen, Paul Routenburg, *FT*)

ISRAEL Who needs shortwave? For \$1 a minute you can get 3 or 4 minutes of news from Israel by phoning 1-900-568-NEWS (Mike Fern, CA, *DX Spread*)

IBA's Yemenite program is now scheduled Tuesday and Thursday 1230-1255 on 17575. Ladino is at 1645-1700 on 11585, 11655 (Israel Radio) See SPAIN



ITALY Voice of Europe has a 600-watt transmitter atop Carnia Mountain, near Forni Alto; they plan to get a 10-kW Continental transmitter, to broadcast religion to eastern Europe. Technical manager is Ing. Gian Luigi Spadotto, to whom reports can be faxed at (x39)434-997687 Telpo to his attention. Frequency changed from 7555 to 7537 with a new 1 kilowatt transmitter, 24 hours (Dario Monferini, Milano, *Play-DX*) 7537.5, the operator faxes me; reports wanted (Eugene R Bernald, Pan American Broadcasting, Cupertino) VOE says "we want to provide a touch of fantasy which is so difficult to find on official SW stations." (via Hans Johnson, MD, who also provides their logo, not really spelt UROP)

Italian Radio Relay Service on a Sunday from 0545 on 9815 USB, switching at 0654 to 9860 until 0800 including a mailbag in English at 0716 (Ernie Behr, Ont, RCI *SWL Digest*) Called *Hello There*; other programming is gospel, or UN/UNESCO, except for *Play DX News* in Italian and English with Dario Monferini, on the 2nd Sunday at 0930-1000 (IRRS)

JAPAN New additions to Radio Japan's *DX Corner* (schedule last month): a propagation report every week; and DX news from Bruce MacGibbon on the third Sunday, such as June 17.

KAZAKHSTAN Fortuitous absence of other stations clears the way for Alma Ata to be heard: with RCI off 5960 at 2300, Alma Ata opening with lengthy anthem, signal increasing until RCI covers at 2330 (Alan Knapp, VA, *W.O.R.*) And with Prague off 5930 at 0100, Alma Ata very clear (Eric D. Patterson, MA, RCI *SWLD*)

KOREA NORTH While Americans have trouble getting a

reply from Radio Pyongyang, my report mailed directly without return postage was rewarded with a *National Geographic*-sized package containing super stuff such as postcards, a flag, calendar with 3D picture, QSL card in German, program schedule, one large copy of *Youth Vanguard of Juche*, revolutionary magazine, in full colour, with glossy pictures including the Tower of Juche Idea, my all-time favourite urban landmark. It's the third or fourth such package I have received over the years (Patrick McDonald, Australia, via Larry Nebron)

LEBANON King of Hope's current schedule on 6280 is 0300-2200, including English: to the Mideast at 0600-1000; Mideast and India 1400-1500; Europe and USSR 2000-2200, except for Turkish Saturday at 2130.

LITHUANIA A Moscow official explained the two-day takeover of Vilnius frequencies as a switching error due to converting schedules to summer time (BBC Monitoring) Trouble is, it happened a week before DST.

Disruption of Radio Vilnius on 11770 and 12060 continues: high-power transmitters cut off daily during both programs, 2200 in English and 0000 in Lithuanian, replaced by two defective transmitters, possibly converted jammers; 11770 with very weak audio, 12060 with loud noise; Soviets probably deny it, but the trick is quite obvious. Radio Vilnius heard best on 17665, also on weak, unannounced 11540 (Ernie Behr, Ont., *W.O.R.*)

NETHERLANDS Some Radio Netherlands previews: During 1990 the *Images* program on Tuesdays will extensively cover celebrations commemorating the 100th anniversary of the death of Vincent van Gogh. Wednesday features: through June 6, mechanical music instruments; June 13, growth since 1940 of the world's largest port, Rotterdam; June 20 until September 5, focus on the Dutch Antilles and Surinam. *Rembrandt Express* on Fridays no longer has a monthly column for gays and lesbians, The Gay Front, but such topics are now integrated into the show; a new monthly column is Count Me In, for the disabled (via Will Martin)

(non) Quality Radio, a music pirate, operates Sundays between 0700 and 2200 on 9985, 15055 (varying 15054 to 15058) or 21850, with two-hour programs. Address is P O Box 85 455, 2508 CD, Den Haag, Holland. Correct reports verified with attractive QSL card for 2 IRCS (not required from Third World) (Steve King, Quality Radio, *W.O.R.* & RCI *SWLD*) It's an unofficial station in Ireland (AWR DX via Wolfgang Buschel)

NETHERLANDS ANTILLES Correction: our ID signal we call "pingles," not "tingles." TWR has a policy against appeals for money on the air, even backhandedly. Tapes from outside sources are heavily edited also for religious and political content, stuttering (Chuck Roswell, *Bonaire Wavelengths*)

NEW ZEALAND RNZI's biweekly mailbag, including DX news from Arthur Cushen, has been confirmed UTC Mondays 0430-0500, repeated UTC Fridays at 1905, both on 17680 (*W.O.R.*)

PERU Sendero Luminoso took over Radio la Oroya, near Huancayo, to broadcast an anti-election message (AP via Larry Nebron) *WRTVH* lists on 4860.

That station was lucky compared to Radio Altura, Cerro de Pasco on 3340, destroyed in February by Sendero Luminoso; the National Radio & TV Association has started a fundraising campaign to rebuild

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Shortwave Broadcasting

it (Rafael Rojas Foinquinos, *Play-DX*)

Radio Fiesta, Trujillo, La Libertad, three nights in a row between 0110 and 0220 on 3499.3, announced as 3500; folk music format. Radio Huayllay, Cerro de Pasco, testing Sunday at 2106-2226 on 6140.0, but not heard in morning or after dark (Pedro F. Arrunategui, Lima, *Play-DX*)

Radio Estrella, Huanuco, captured on new 5147.3 from opening at 0957 until 1030 (Toshiaki Sakai, Japan, *Radio Nuevo Mundo*) Radio San Mateo, 4495.1, from 1039 past 1105 (Kirk Allen, OK, *FT*)



RADIO CORA

PORTUGAL Radio Renascenca, Catholic station for emigrants, operates: 0015-0115 on 9600; 0955-1100 Sunday on 9575; 1800 (Saturday and Sunday 1400)-1900 on 9680 (BBCM)

Radio Portugal beams Portuguese to Brazil, but strangely enough, also English UTC Tuesday-Saturday at 0230-0300 on 9600 and 11840, while 9680 and 9705 are to the USA. Feature programs after the news: Tue., *Welcome to Portugal*; Wed., *Music Time*; Thu., *Challenge of '92* (perhaps combatting Spain's limelight with the Columbus Quincentennial?); Fri., *Portugal Past & Present*; Sat., *Mailbag-Lusiad Friendship Club* alternating with *DX program, Collectors' Corner* (via Ed Kusalik, *DX Spread*)

SAIPAN (See also GUAM) KHBI announced a move from 15385 to 15055 for the 1400-1800 broadcast to India (Bruce MacGibbon, OR, *DXS*) Confirmed

SEYCHELLES FEBA keeps dropping English, now left with only: 1458-1600 on 9590 and 15330; and a separate program on 11865 at 1458-1555 (Sunday to 1540, Monday 1625, Saturday 1610) (*W.O.R.*)

SOUTH AFRICA Reformist regimes reassess radio's role in perpetuating propagandistic priorities. A government budget cut forced Radio RSA to announce that from May 1 it would drop all shortwave broadcasts targeted beyond Africa. Of the 105 staff, 21 are fired; funds will go instead to satellite-fed TV to Europe and North America (*RNRMN*) "Definite" and tentative frequency schedules as far ahead as November must be retracted as Radio RSA focuses on Africa alone. And so much for Cape Verde and Middle East relay plans, too (*World of Radio*)

SPAIN RNE-Radio Exterior de Espanya now has programs in Sefardi (i.e. for descendants of Jews who survived the Inquisition) Fridays at 0200-0215 on 21555, 0415-0430 on 9690.

SWITZERLAND A 1990 questionnaire from SRI explores whether listeners would like the station to expand to other media: video-cassettes, Telefax, and RTTY! Attention: Larry Van Horn.

TAIWAN Add another station to C-SPAN's cable audio service: Voice of Free China has signed a contract to be carried, one hour in English daily (via Larry Nebron, *W.O.R.*)

THAILAND Radio Australia is exploring the possibility of setting up a relay here, perhaps near the VOA site under construction at Udon Thani, or in Pathum Thani province (*AFP* via BBCM) Richard Broinowski has visited Thailand about this, but it is only a proposal at this stage (Keith Synott, RA, *DXS*)

TONGA An Islamic program Sunday at 0530 on 5030 brings to mind North Africa, but in fact it's from A3Z (Terry Palmersheim, WA, *FT*) Koran heard at 0603 (Guy Atkins, WA, *FT*) All the more surprising since Tonga is believed to be almost 100% Christian.

URUGUAY Survey of current activity: 6045.1, Radio Libertad Sport, 0915-3000v depending on sports; 6139.9, Radio Monte Carlo, 1030-1630; 9620.3, SODRE, 1000-0400 but subject to change for move to new site at Santiago Vazquez; 11734.9, Radio Oriental, 1630-2300v; 11835, Radio El Espectador, 1000-0300; powers are 500 or 1000 watts; stations on 4900, 6035, 6075 are inactive (Gabriel Ivan Barrera, *Oz DX*)

USA Hats off to WYFR in Okeechobee for resolving a frequency conflict an hour after we brought it to their attention: our best chance to hear Sweden is until 1600 on 21500, but WYFR was trumpeting as early as 1550 prior to Portuguese at 1600. They agreed to crash-start at 1600, eliminating the overlap (*World of Radio*)

WWCR informs us listener response has been "overwhelming" to Tom Valentine's two-hour talkshow, *Radio Free America*, weeknights at 0300 on 7520. In *DX Spread*, Mike Fern objects to an RFA he heard, which sounded pro-Nazi and anti-Semitic. But Tim Hendel finds RFA dedicated more to out-of-mainstream health remedies, vitamins and natural foods than to far, far right politics of most other WWCR programs, such as *Point of View* which immediately follows.

The repository of the Committee to Preserve Radio Verifications, the World Service of the Christian Science Monitor, has decided to resume QSLing from Boston after a hiatus during which only site engineers could voluntarily do it. But the new deal is patterned after RCI's do-it-yourself cards, except the blanks should be easier to get than RCI's. They even invite radio clubs to distribute them, and will still verify in the traditional way after a delay. New WCSN has added Russian, each 4th Sunday at 0905 on 9840 (*W.O.R.*)

A Fuji Film blimp crash in Elizabeth City, NC may have been caused by megawatt radio beams from VOA-Greenville stopping two engines, says the National Transportation Safety Board. No one was hurt (*AP* via Jay Novello, NC)

USSR English from Radio Station Peace & Progress, until Sept. 2: 1300-1359 to SE Asia on 21505, 17805, 17730, 17635, 15180, 11870, adding these at 1330: 17835, 15560, 15480; SW Asia 1630-1659 on 17635, 12055, 11695, 6135, 6110; Africa 1630-1659 on 21715, 17655, 17615, 15330, 11775, 11745; Europe 2100-2159 on 15260, 11980, 11880, 11830, 9820, 9470 (via John Carson, OK) UN Radio now relayed by RSP&P on a Saturday at 2221 on 4795 (Mikhail P Timofeyev, USSR, *DSWCI SW News*) Would now be an hour earlier on frequencies above

More Soviet republics are opting out of DST this year: Uzbekistan, Turkmenia, Tajikistan, Belorussia, Azerbaijan (and the Baltics??). Radio Moscow announced that due to its "tiny labour force" the DX program to North America has been dropped, but could be resumed if there is sufficient listener demand (BBCM) Remember, these guys can tap the whole of the USSR from the inside. Write to Maxim Tkachenko, RM DX Club, Radio Moscow, USSR (Bruce MacGibbon, *DXS*)

The Soviet Mayak program, established in 1964, this April began broadcasts in non-Russian languages, the first being 30 minutes in Lithuanian (*TASS* via Larry Nebron, *W.O.R.*) See also **KAZAKHSTAN, LITHUANIA**

Read much more about shortwave broadcasting and other media in **REVIEW OF INTERNATIONAL BROADCASTING and/or DX LISTENING DIGEST**. Samples are \$2 each, 10-issue subscriptions \$21 or both for \$40, in North America, US funds on a US bank, from Glenn Hauser, Box 1684-MT, Enid, OK 73702.

Hear much more from Glen Hauser's broadcasts: **WORLD OF RADIO**, via WRNO, UTC Thursday 0030, 1530, 2300; Friday 0030; Saturday 0300, 2330; Sunday 2030-on 15420 until 2100, then 13720; on 7355 at 0000-0300, then 6185; and via RFPI, Costa Rica: Friday 2000, 2330, Saturday 0315, 0645, 1930; Sunday 0100, 0630, 2230; Monday 0400; Tuesday 2230; Wednesday 0200, 0545, 0915-on 21566 and 13660 until 2330 weekends, 0300 weekdays; on 7375-USB after 2330. And a separate DX news report each week on RCI SWL DIGEST, schedule given last month, including Saturday 2336 on 9755, 5960.

Broadcast Loggings

Let other readers know what you're enjoying. Send your loggings to **Gayle Van Horn**, c/o Monitoring Times. English broadcast unless otherwise noted.

0015 UTC on 9770

Mall: Radio Beijing relay. "Current Affairs" program on a national flag protection draft law. Heard on parallel 11715 kHz. (Bob Fraser, Cohasset, MA)

RD-TV du Mall audible on 4835 at 2220 UTC in French. (Robert Landau, Secaucus, NJ) (Sam Wright, Biloxi, MS)

0020 UTC on 5960

Canada: Radio Canada Int'l. "The World at Six" with report on Brazil's galloping inflation. Audible on parallel frequency 9755 kHz. (Bob Fraser, Cohasset, MA) (George Neff, Lutz, FL) Heard on 11940/9535 kHz at 0100-0130. (Brian Bagwell, St. Louis, MO) (Frank Hillton, Charleston, SC)

0023 UTC on 9620

Yugoslavia: Spanish. Rock music program, audible on parallel 11835 kHz. Closing comments and IDs to sign-off at 0028 UTC. (Harold Fodge, Midland, MI) English programs heard on 9660/7215 kHz at 0030-0045 UTC. (Frank Hillton, Charleston, SC)

0030 UTC on 6020

Netherlands: Radio Netherlands. Happy Station musical program with a special birthday greeting to a 102-year-old listener. Heard also on 6165 and 15315 kHz. (Bob Fraser, Cohasset, MA) Audible on 17575 kHz at 1215 UTC. (George Neff, Lutz, FL) (Harold Bower, Sunbury, PA)

0100 UTC on 5930

Czechoslovakia: Radio Prague. Newscast and closing comments. "Youth Magazine," "Stamp Corner," and "Made in Czechoslovakia" features. (Robert Landau, Secaucus, NJ) "Rock Rodeo" program at 0115 UTC on 7345 kHz. (Bob Fraser, Cohasset, MA) (Sam Wright, Biloxi, MS)

0128 UTC on 9395

Greece: Voice of Greece. Greek musical vocals, audible on parallel frequency 9420 kHz. Discussion on relations with Turkey and the importance of a dam under construction. (Bill Houghton, Danville, IN) Monitored on 7430 at 0130 UTC. (Ronald Westbrook, Columbus, OH)

0210 UTC on 4844.4

Guatemala: Radio Kekchi. Spanish/Indian dialect. Spanish religious vocals, inspirational message and prayers. Announcer chat in unknown language and two clear IDs.-ed.

0259 UTC on 4780

Djibouti: RD-TV Djibouti. Somali. After nightly checks, finally found one without interference from the FEMA station. Xylophone interval signal to sign-on ID. Fade out during talk, with signal improving for Holy Koran recitations. Newscast at 0330 UTC, ID and signal collapsing through Arabic style music. (Rod Pearson, St. Augustine, FL) *Thanks for still reporting, Rod. Your "Fed File" column is great.-ed.*

0300 UTC on 3250

Honduras: Radio Luz y Vida. Religious programming of music and sermons. (Bill McDavitt, Durham, NC) Considerable interference noted throughout prayers from 0200-0230. (William Kruger, Miami, FL)

0337 UTC on 3255

Lesotho: BBC relay. In-depth feature on Nelson Mandela. Monitored parallel frequency 6005 kHz Ascension Island relay. (Harold Fodge, Island Lake, MI) (Charles Edwards, Scranton, PA)

0342 UTC on 3282.5

Mozambique: E. Provincial De Sofala, Biera. African vernaculars. Male announcer presents African high-life music to 0350 UTC. Chantings and drum signals to text readings at 0400 UTC. Interference noted in USB on 3283.0 kHz. (Harold Fodge, Island Lake, MI) *Good log, Haroldi-ed.*

0349 UTC on 7255

Botswana: Radio Botswana. African vernaculars/English. Distinctive cow bell interval signal and farm animal sounds to station ID. (Tim Johnson, Galesburg, IL) (John Tuchscherer, Neenah, WI)

0400 UTC on 4958

USSR: Azerbaijan Radio, Baku. Azerbaijani. Arabic style music with chantings amidst Morse code interference. No spoken audio for an hour, thus assuming this was Baku. Monitored again on two consecutive days with same programming. (Frank Mierzwienski, Mt. Penn, PA)

0417 UTC on 15170

Tahiti: RFO. Tahitian. Very good signal quality for island music, talk. (John Tuchscherer, Neenah, WI) Monitored in French/Tahitian past 0435 UTC. (Richard Langer, Pittsburgh, PA)

0433 UTC on 5034.2

Central African Republic: RD-TV Centrafricaine. French. Clear ID with comments and native African music. (Tim Johnson, Galesburg, IL) Sign-on with piano interval signal, anthem and ID. Fair-poor signal quality for African highlife music. (Brian Bagwell, St. Louis, MO)

0449 UTC on 4945

Colombia: Caracol Neiva. Spanish. National newscast, with bank and cigarette commercials. (Harold Fodge, Midland, MI) "Caracol" promos during 0210-0225 UTC on 4945/6150 kHz. (William Kruger, Miami, FL)

0532 UTC on 4865

Colombia: La Voz del Cinaruco. Spanish. "Esta es Caracol" ID to news segments on Medellin, Manizales and Baranquilla. (Harold Fodge, Midland, MI) Easy-listening to Spanish ballads at 0430 UTC. (William

Kruger, Miami, FL) (Frank Hillton, Charleston, SC)

0620 UTC on 14917.7

Kiribati: Radio Kiribati. Lady announcer in English with national news, station ID, and local island music. (Tim Johnson, Galesburg, IL)

0715 UTC on 9545

Solomon Islands: SIBC. Local programming to news at 0730 UTC to include shipping data. Music variety and station ID as "SIBC." Good reception to abrupt fade out at 0745 UTC. (Bill McDavitt, Durham, NC) (Jack Davis, Birmingham, AL)

0915 UTC on 4965

Brazil: Radio Alvorada. Portuguese. Brazilian pops and talk to ID at 0922 UTC. Fair signal under moderate static. (Robert Landau, Secaucus, NJ) (Richard Langer, Pittsburgh, PA)

0932 UTC on 4885

Colombia: Ondas del Meta. Spanish. Latin tunes and full ID at 1000 UTC. Strong signal over moderate atmospheric static. (Robert Landau, Secaucus, NJ) Monitored on 4885 kHz at 0410-0430 with pop music, time checks and IDs. (Richard Langer, Pittsburgh, PA)

0945 UTC on 4821

Peru: Radio Atahualpa. Spanish. Peruvian flute music with frequent IDs. Fair signal to fade out at 1003 UTC. (Robert Landau, Secaucus, NJ) Monitored 1030-1100 UTC of IDs and outstanding flute melodies. (William Kruger, Miami, FL)

1003 UTC on 3280

Ecuador: La Voz del Napo. Spanish. News announcements with flute music shorts between topics. Religious programming at 1027 UTC. (Harold Fodge, Island Lake, MI) Fair signal quality from 1030-1130, but adequate for reporting details. (Sam Wright, Biloxi, MS)

1110 UTC on 3395

Ecuador: Radio Zaracay. Spanish. Latin pop vocals to canned ID. Local news briefs, time check to commercial. (David Thompson, Houston, TX) (Sam Wright, Biloxi, MS)

1112 UTC on 3205

Papua New Guinea: New Guinea. Radio West Sepik. Pidgin. Fair signal of local island announcements and country/western music. PNG scan revealed active stations on 3335 (East Sepik), 3375 (Western Highlands), and 3260 (Radio Madang). (David Thompson, Houston, TX)

1158 UTC on 4799.8

Guatemala: Radio Buenas Nuevas. Spanish. Canned promotional and IDs. Morning show with local announcements/messages to area listeners. Guatemalan vocals with backup marimbas. (Frank Hillton, Charleston, SC) (David Thompson, Houston, TX)

1208 UTC on 4845

Peninsular Malaysia: Radio TV Malaysia. Tamil. Amazed to discover the Home Service of Radio 6 during a bandscan for Indonesians. Continuous Indian sitar music program to 1222 UTC. Brief ID break as sitars continue. Obvious language change at the half hour as male reads news in the Malay language. Although the signal was weak, and suffered intermittent fades, I was able to continue monitoring until a final fade out at 1250 UTC. Who knows--maybe you'll see this one again in the "QSL Report" in a few months.-ed.

1230 UTC on 9580

Australia: Radio Australia. "Sound About" rock music program from Deborah Harry, Bob Dylan, the Australian Hippos and the Sugar Cubes. (Bob Fraser, Cohasset, MA) Audible on 17795 kHz at 0429 UTC. (George Neff, Lutz, FL) (Don Moreland, Ridgecrest, CA)

1335 UTC on 9840

Vietnam: Voice of Vietnam. Political commentary to station ID. Audible signal on parallel 15010 kHz. (Tim Johnson, Galesburg, IL) (George Neff, Lutz, FL) (Brian Bagwell, St. Louis, MO)

1495 UTC on 15533

Pakistan: Radio Pakistan. French. News brief followed by station sign-off and national anthem. (Tim Johnson, Galesburg, IL)

2035 UTC on 9779.4

Yemen Arab Republic: Radio San'a. Arabic. Exotic Middle Eastern music and readings from the Holy Koran. Station sign-off routine with ID and national anthem at 2109 UTC. (Tim Johnson, Galesburg, IL)

2040 UTC on 13610

Kuwait: Radio Kuwait. Arabic. Jazz music program to station ID. (George Neff, Lutz, FL) Monitored on 21675 kHz at 2120 UTC. (Harold Bower, Sunbury, PA) (David Thompson, Houston, TX)

2100 UTC on 9580

Gabon: Africa No. 1. French. Interesting Afro/French music on native instruments and fascinating conversations to newscast. (Leslie Edwards, Doylestown, PA) Monitored 2215-2250 UTC on 9580 kHz. (Brian Bagwell, St. Louis, MO)

2155 UTC on 12005

Tunisia: RD-TV Tunisienne. Arabic. Recitations in progress, to ID at 2200 UTC. Male/female duo read the news. (Robert Rinkewich, Keyport, NJ) (Donald Westbrook, Columbus, OH)

2246 UTC on 6020

Brazil: Radio Gaucha. Portuguese. National programming with ID at the hour. Moderate signal clobbered by Radio Netherlands at 2327 UTC. (Robert Landau, Secaucus, NJ) Braz pops and news bits at 0010-0035 UTC. (Charles Edwards, Scranton, PA)

2325 UTC on 11920

Cote D'Ivoire: RD-TV Ivoire. French. DJ format show featuring French pops and music from Jackson Brown. (David Thompson, Houston, TX) Low modulation and moderate signal for French/African music on 7215 kHz at 2352 UTC. (Harold Bower, Sunbury, PA)

Larry Van Horn
c/o MT, P.O. Box 98
Brasstown, NC 28902

Monitoring the Drama

I love a good story. That's why I listen to the utility world bands. There is always something great to hear and the variety is endless. In fact, whatever your interest, the utility bands probably have something to offer.

This month Alaska's Jerry Brookman has a good one to tell. Jerry is, admittedly, a shortwave broadcast listener by nature. But he does admit to prowling about the areas of the ute bands that feature ship-to-shore, point-to-point and air-to-ground communications. He says he just wants to keep up with what is going on and folks, that is what utes are all about -- being there as the action happens.

Anyhow, one evening around 0425 UTC, Jerry was tuning across 17904 kHz and was listening to Honolulu ARINC aeradio when an emergency was declared by aircraft N2085E. The aircraft was low on fuel over the Pacific and needed help. Jerry also heard what sounded like a Coast Guard aircraft and ship get involved, but the signals were so weak that making out all the details was difficult.

In the middle of all of this, N2085E asked for directions to Christmas Island. He wanted to land there. Evidently Honolulu got on the horn to let Christmas Island know they were getting visitors. The word was then passed back to N2085E that Christmas Island was ready for them. At about the same time, the natives were lighting the airstrip by parking cars at the four corners of the tarmac and turning on their headlights. Other illumination was provided by bonfire.

The US Coast Guard aircraft apparently was able to see N2085E on his radar, at one point advising the pilot that he had gone by the island and was about 25 miles north of it. As luck would have it, Jerry said, "just about the time that things were really getting interesting, the signals faded out due to propagation. I watched the television for news on an aircraft that might have had to ditch near Christmas Island but heard nothing!"

Still wondering what had happened to N2085E, Jerry wrote to Honolulu ARTCC and they replied, saying that the aircraft hadn't been in their area of control but that the news reports there had said that N2085E had made it to Christmas Island okay. They also gave Jerry the address of the Coast Guard facility there in case he wanted to write to them.

This wasn't Jerry's only brush with the high drama of the utility world bands. In the past, Jerry was also able to tune in a US Coast Guard helicopter that was attempting to bring a seriously ill woman to the hospital in Kodiak, Alaska.

So what is Jerry's advice to other shortwave listeners who want to share in the excitement of the utility bands? "There is drama to be heard on the airwaves, if one is patient (and/or lucky) enough to find it and routinely listen for it." Thanks, Jerry, and we hope you check in often.

Another Convert Speaks Out

"I've been enjoying your column for the past few months since I started subscribing to *Monitoring Times*," says Dave Casler of Louisville, Colorado. "I subscribe to *MT* primarily to get the shortwave broadcast frequency listings every month and I spend a fair amount of time listening to foreign broadcasts in English."

Dave is a ham radio operator who uses a Yaesu FT-747GX transceiver with general coverage receiver. This new ute buff got his wings when he bought an AEA PK-232 MBX multi-mode terminal for RTTY/FAX/SITOR/AMTOR/CW.

"I started exploring the ute bands using the SIAM mode and your column in hand," Dave said. For listeners not familiar with AEA's SIAM mode, that stands for Signal Identification and Acquisition Mode. It enables the listener to determine that type of digital signal he is tuned to and then at the operator's command switch the PK-232 into that mode to start receiving the signal.

"It was quite an eye-opener to see the kinds of things available to utility listeners, and I just spent about an hour at it. You can be sure I'll be spending more time, with your column at hand," said Dave. "Thanks very much for an introduction to a whole new world."

Dave, you are welcome. The rest of the shortwave broadcast world is also invited to join in the fun. Just turn to the ute logging section in this month's issue and give a whirl on the dials of your receiver to a few of the frequencies listed. Be sure you sit on them a while as utes aren't quite like a broadcast station. Sooner or later (probably sooner) you will hear some very interesting traffic on these frequencies. There is always something new to hear and you should be a part of the action. Give the ute bands a try.

Be sure to report what you hear as you tune around to these pages via Brasstown. I look forward to hearing from each of you.

He Heard the President

Well, not exactly, but it did get your attention. Robert Kelty was listening to the shortwave bands recently and heard Air Force One, the president's aircraft. Air Force One was working the usual Andrews Air Force Base (or "Andy" as it is sometimes referred to) and heard one of the operators compromise the designator on 13217 kHz. The frequency designator for that one is X-906. Thanks, Robert, and we hope you check in often.

Robert isn't the only person hearing Air Force One. Len Riley, N5MLR, over in Austin, Texas, has also been doing some listening. Len says that he caught AF1 talking to Andrews on 18023 kHz -- the usual stuff, radio checking primary and secondary channels.

He also caught AF1 talking to Houston ARTCC on 132.8 MHz in the VHF aero band. Yep, folks, not in the military aero bands where you thought they might be but on the civilian aero bands. Just a hint for the next time the prez and his gang come to your neighborhood.

Len also caught some interesting traffic on 415.7 (Secret Service Foxtrot). Seems as though McBride was setting up a golf game for Timberwolf (George Bush's Secret Service call sign) and wanted two golf carts and two caddies. They also talked about the motorcade.

Len asks if Air Force One QSLs. I wish they did, Len. There would be one in my collection. A lot of folks have tried and if they answer at all, it is usually a nondescript/non-QSL letter from one of the communicators aboard the aircraft. Nothing is ever received that could be constituted as a QSL in the truest sense.

"And who/where is (are) the 415.7/407.85 phone patches on

the ground side? Does the advance party carry it?" asks Len.

The echo/foxtrot sites are permanent throughout the country at fixed sites. Once leaving the airwaves, the transmissions go via telephone long lines up to Crown (Washington DC) for further phone patch to whoever they want to talk to.

Some very interesting comms can be heard on these channels even when the President is not in the area. Most all SAM (Special Air Mission) flights use echo/foxtrot so keep it plugged in your scanner. It might be used as a good tool to indicate some SAM activity you didn't know about on HF if you hear something.

Got a Verie from the Air(ie)?

Yes sir, it pays to read this column and Hugh Hawkins, former San Antonio homeboy, now Magnolia State resident, agrees. After reading the July 1989 issue where I discussed solving the KAWN mystery, Hugh sent a reception report for one of the Offutt/Elkhorn USAF Air Weather Service transmissions.

Hugh not only received a verification back, but also received a nice fact sheet on the station from the weather boys up at Scott AFB. He also received a small decal of the logo used by the Air Force's Air Weather Service. For those of you who might have not seen the article but have heard the station, I've reproduced the fact sheet Hugh received. It should fill you in.

Dear Mr. Hawkins,

In response to your letter of 1 February 1990, the following information is provided. We believe you were successful in copying a field exercise broadcast by one of our mobile weather teams. It is impossible for us to determine the specific source of this particular transmission. However, the equipment used is as follows:

Transmitter: Trans-World TW100F transceiver.
Antenna: Telex/Hy Gain reel tape doublet, configured as an inverted V, with a center supported 12 foot telescopic mast.
Power: 125 watt.

For your information the Air Weather Service now employs a High Frequency Regional Broadcast (HFRB) originating from our Offutt/Elkhorn site, which is located near Omaha, Nebraska, USA. This broadcast provides both alphanumeric and facsimile products via a 10KW HF transmitter. Facsimile products are broadcast at 120 scans per minute (SPM) from the upper side band and alphanumeric products at 100 words per minute (WPM) from the lower side band which permits the use of a single frequency for both transmissions. The site employs both low-takeoff and high-takeoff antennas which provide a reception range from near-in to over 3,000 miles. To avoid interference between the low-takeoff and high-takeoff antennas, a different frequency is used by each antenna system. Available frequencies for the Offutt/Elkhorn site are: 3231KHZ, 5096KHZ, 10576KHZ, 11120KHZ, 15681KHZ, and 19326KHZ. The alphanumeric broadcast provides hourly observations and terminal forecasts for selected CONUS stations.

We have entered the information you requested on the verification form you provided. We wish you continued success in your hobby and in the new year.

Sincerely,


PHILLIP J. JOHNSON, Lt Col, USAF
Director, Materiel Resource Mgmt
OCSS/Program Management

1 Atch

Verification Form

mystery on the spot. The truth is that there is no mystery here. The frequency in question is one of the many "Cemetery" net frequencies that abound throughout the shortwave spectrum. If you would like a fuller explanation, check out my January 1989 column.

We also have some clarification of a logging for "Poor Treat" which appeared on the frequency of 8990 kHz. One of our readers, Mr. John Doe of London, says this was undoubtedly RAF Portreath, in Cornwall, at the southwest corner of the country (UK). Portreath is one of a chain of radar tracking stations around the coast of UK.

Starting in the Shetlands and going clockwise around the country, stations you may hear are Saxa Vord, Buchan, Boulmer, Staxton Wold, Neatishead, Portreath, and finally Bishop's Court in Northern Ireland and Benbecula in the Outer Hebrides. Yeovilton, which is a Royal Naval air base, also joins in sometimes.

Thanks a bunch to Mr. John Doe of London for that update. I'm sure Kenneth Kranhold in Germany appreciates your input, John, as this solves his mystery of the activity on 10478 kHz.

Update on January 1989

Speaking of my January column and "Cemetery and Inform" nets, Geoff over in the UK has sent an update and possible new information on a new net. The Inform nets use one-word call signs (i.e. Robot, etc), while the "Cemetery" nets use two letter (i.e. Alpha Delta) call signs. They do not appear to have amalgamated into the "Reform" net so far.

Geoff reports that there appears to be a third European net that uses two-word call signs and the frequencies are:

3096	4595	4853
3923	4702	5132
4465	4725	5477
4497	4744	9025

All transmissions USB

Currently the most active frequencies are 9025, 4725 and 4853. Calls in use are as follows:

Quick River (appears to be boss man)	Deep Valley
Green Valley	Dart Board
Golf Ball	Early Pigeon
Lordship	Bold Face

Geoff, the 4725 catches my eye without looking it up. That is a SAC frequency here in the US. I wonder if this might be some sort of European SAC net -- even the call signs would hold up as being SAC type calls. Just a hunch. I wonder what Mr. UK has to say about this one.

Aimed at the US

One of our readers, Asdrubal, in West Germany, mentions he is stationed at an isolated observation post along the E-W German border. He likes *Monitoring Times* very much but laments that he doesn't see very much in print from his neck of the woods.

Yes, Asdrubal, I agree, and if you have some intercepts from that portion of the world, maybe it will help others contribute. We would like to hear from you, especially with all of the changes occurring in your area.

Some of our US readers have asked me why I do not provide the real names of our overseas contributors, like "Mr. UK" and "Asdrubal." That's easy to answer. The monitoring laws of their

10478 Not Such a Hot Mystery After All

I didn't really realize you folks looked that close at the loggings each month until the mail started pouring in over Bill Battles 10478 mystery several months ago. I also didn't look up the frequency in my database which would have solved the

countries prohibit them from listening to such communications on the utility bands.

In countries where such laws are in force, I assign the writer a pseudonym and avoid printing anything about them that could give away their true identity. It is too bad that their laws aren't as liberal as ours but I am always happy to hear from any of

our readers around the world and rest assured that your identities will be safe with me. You can send your contributions to the address in the masthead.

Well, 'til next time, good DX de N5FPW and now on with this month's look at your loggings....

Utility Loggings

Abbreviations used in this column

All times UTC, frequencies in kilohertz. All voice transmissions are English unless otherwise noted.

AM	Amplitude modulation	ISB	Independent sideband
ARQ	SITOR	LSB	Lower sideband
CW	Morse code	RTTY	Radioteletype
FAX	Facsimile	UNID	Unidentified
FEC	Forward error correction	USB	Upper sideband
ID	Identification		

3291.4 RGW-Moscow, USSR with CW RGW TR repeated several times followed by five-letter groups (95 in all) at 0501. (Bilodeau, IL)

4028.0 Spanish female five-digit number station at 0626. (Fernandez, MA)

4030.0 Bulgarian female five-digit number station at 0626. (Fernandez, MA)

4125.0 Y4CD-Vessel Edward ??, location 37°34'N-75°16'W working "Charlie" talking about repairs on vessel "Northern Traveler" at 2349. (Russ Hill, Oak Park, IL) *Russ, my ITU list shows Y4CD is the Eduard Claudius, a fishing fleet ship. Welcome to the column, Russ-ed.*

NOJ-Coast Guard COMSTA Kodiak, Alaska, working KGD91-Yakutat, Alaska, at 1422 in USB with request to clear frequency because a search and rescue operation was in progress. The ship in trouble was the fishing vessel Deliverance which was taking on water and sinking. KGD91 had come on the air at 1416 with a weather broadcast. (Art Blair, CA)

4416.3 Zulu 6 Oscar and other similar calls in a net with radio checks, tests, check-ins, etc. Sounded like a US Navy exercise. (Fernandez, MA) *Probably-ed.*

4500.0 English female three/two-digit number station at 2328. (Hurley, MD)

4517.0 Air Force MARS radio net with Alpha Foxtrot 1 running net control then taking a message from AFA1 and AFA1PA and others at 2330. (Hurley, MD)

4730.0 RAF-Cyclops, Cyprus with a weather broadcast in USB (locations designated by three-letter designators) at 0409. (Fernandez, MA)

4800.0 Male repeating phonetic sequence "DBB66WSS7Q#MCP5J5D3STCW" at 2158. At 2201 heard another male repeating the above coded message. (Bob Hurley, Baltimore, MD) *Sounds like an SAC EAM broadcast to me, Bob-ed.*

4882.5 Bulgarian female five-digit number station at 0550. (Fernandez, MA)

5015.0 German female five-digit number station at 0646. (Fernandez, MA)

5080.0 R3E to Plead Control with position report at 1850 in USB. (Bill Brinkley, Belmont, CA)

5762.0 Spanish female five-digit number station at 0803. (Fernandez, MA)

5887.0 IMB-Rome, Italy with RY test tape de IMB31/32/33 at 0537. RTTY 850/50N. (Bilodeau, IL)

5910.0 German female three/two digit number station at 0610, mixing it up with a Spanish broadcast station in background. (Fernandez, MA)

6200.0 USS Phillipine Sea heard at 0010 working COMSTA Miami duplex in USB on 6506.4. New ship? Also USCGC Butterwood working COMSTA New Orleans at 0018, and USS Scott (DDG-995) working Miami and Portsmouth at 0028. (Perdue-AL)

6227.0 Spanish female five-digit number station at 0700. (Fernandez, MA)

6270.0 English female five-digit number station (Israeli Mossad) at 0604. (Fernandez, MA)

6453.0 German female five-digit number station at 0812. (Fernandez, MA)

6507.0 German female five-digit number station 0607. Beginning and ending of each number was cut, as if audio was VOX operated-very prominent. (Fernandez, MA)

6676.0 Two male in USB (heavy Irish accents) talking about fishing operations with XXX language. Frequency within aero bands. Props were excellent to the UK at 0615. (Fernandez, MA)

6768.0 Spanish female five-digit number station at 0720. (Fernandez, MA)

7527.0 Hammer heard here going back to scan at 1652 in USB. (Brinkley, CA)

7918.0 Female English five-digit number station at 0440 (Mossad). (Fernandez, MA)

8122.0 Spanish female five-digit number station at 0610. (Fernandez, MA)

8354.5 UTBO-16,500 ton Soviet fish factory Kronshtadtskaya Slava with Russian traffic for UJY-Kaliningrad Radio at 0320. Located off the Western Sahara with the "Pionersk" trawler fleet. RTTY 170/50. (Ricks, PA)

8355.0 RMGH-Soviet Navy Oceanographic research vessel Vizir with Russian traffic for UJY-Kaliningrad Radio at 0302. "Yug" class research vessel, 2300 tons, length 271 feet, draft 13 feet, speed 18 knots. RTTY 170/50. (Ricks, PA)

8912.0 Gangster, Sea Bar (AWACS), Slingshot, Quebec, and Hammer. Sea Bat going back to Key West and contacting Miami Center on 135.7 in USB at 1455. Omaha 86 with position report to unid then back to scan at 1311. (Brinkley, CA)

Rainbow 42, Razorback, Slingshot, C5G, 17W and S5C all working on tracking an aircraft in the Caribbean around Haiti. Tried to use Yankee Bravo (5571) but no joy. Slingshot mentioned to units that a relief was coming from Almighty and that they should monitor Uniform 1. (Kerrigan, IL)

9017.0 McClellan AFB GCCS discrete and Mystic Star channel with many phone patches for Gold Eagle (USS Carl D. Vincent) at 0210 in USB. (Brinkley, CA)

9018.0 Monterey LC from Scon LC (airborne) with departure message and radio check, "Poop but readable"??? (Brinkley, CA) *I don't have to read anything into that, Bill. A sailor always understands.-ed.*

9023.0 Bellhop working Trenton Military moved to freq "Alpha November" (*I still think that is 20846-ed.*) at 0300 in USB. Backburner working Bruce 99. Suggested alternate channels of Oscar 4, 8 and 9. Referred to 9023 as Oscar 1. Sounded like they were chasing Russian Bear aircraft. (J.D., Fort Wayne, IN) *Probably were, JD. We see them up and down our coast frequently.-ed.*

Yeager working Auto Shop and Area Code with HG 15, 16 as interceptors (called on 235.4 and back up 274.4 at 1407. Yeager called Side Car at 1420. Binder (had cockpit sound like a TR1), Dragnet Whiskey, Yeager Chalis Charlie in ALBQ area called the following freqs: (sat buffs take notes-ed.) 295.8 up/262.2 down, voice 260.8 (Holloman test freq), 228.9 radar control at 1605 in USB. Guardian with Chalis Bravo (AWACS) and Focus Mike setting up 295.8/262.2 satcom at 1914. Darkstar November called by Guardian at 1713 with no answer. (Brinkley, CA)

9027.0 Heard Big-shot at 0100 and Two-Zero at 0117 with coded messages in USB. (Hill, MI)

Tuff 54 (B-52 out of Castle) to Fog Patch Control (Castle AFB) on S-392 at 1933 in USB. (Brinkley, CA)

9401.6 ODT-Beirut, Lebanon, with CW ID an ARQ Idler at 0422. (Bilodeau, IL)

10455.0 Piccolo transmissions heard at 1458. (Brinkley, CA)

10646.0 Heard "TTT" sent in CW every two seconds (definite spacing between characters) at 0715. No call sign heard. (Fernandez, MA)

10820.0 KPA2-Israeli Mossad female number station heard until 0720. (Fernandez, MA)

11071.0 Navy Tactical net at 1621 in USB. Station said to meet him on DT651. (Brinkley, CA)

11073.0 Piccolo transmission heard at 1650. (Brinkley, CA)

11076.0 Piccolo transmission heard at 1535. (Brinkley, CA)

11123.0 Female operator sending numbers four times at 1525 then into high speed data (buzz saw sound) at 1535. (Brinkley, CA)

11215.0 Bandsaw Hotel (Battlestaff) working Trenton military for phone patch to Backburner to verify opcon/tacon status. Said opcon to 1st Air Force (Blue Crab)/Tacon-Huntress (NE region). Backburner gave Bandsaw hotel posit from K1 Sawyer AFB and also freq for E-3C coordinator (326.4). Finally moved off to 9023 after several phone patches. Heard Sentry 46 working Raymond 24 ID this channel as Charlie 6 at 2020 in USB. (Patrick Kerrigan, Chicago, IL)

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back with intermittent paints at C20 then back to scan. Later called this "Net 1" and went to "secure key 2" at 1700 in USB. (Brinkley, CA)

18984.6 FUJ-French Naval Radio Noumea, New Caledonia, with French military messages. Some messages were encrypted. Mode: AR2 (ARQ Moore) 796/96, channel A at 0400. (Bilodeau, IL)

19129.9 INTERPOL warrants and messages in English and Italian at 0337. Unable to ID positively due to poor copy. Messages were headed "Tokyo" so perhaps it could have been JPA59? In ARQ. (Bilodeau, IL)

19324.5 USAF Global Weather Center (KGWC), Offutt AFB, Omaha, Nebraska, with TAF forecast for various Soviet towns at 2008. Each town was listed in DOD's "Soviet Military Power-1987" as an ICBM base or ABM/BMEWS radar site. RTTY 850/50. (Ricks, PA)

20784.8 CLP1-Cuban Ministry of the Exterior (MINIREX) with plain text SS "urgente" and "muy urgente" traffic at 1528. Started out at 75R baud then switched to 50R baud/850 shift. MINIREX was in "full scream" talking about diplomatic protest. A lot of sabre rattlin' on this channel. RTTY 850/50R. (Ricks, PA)

20860.2 French Telecom Network station with female operator voice mirror (circuit adjustment transmission tape) at 1940. (Fernandez, MA) *I saw this one in Paris, France.-ed.*

21754.0 Beauty Beach (male operator sounded embarrassed with call sign) with alpha-numeric message broadcast at 1930 (USAF). (Fernandez, MA)

22224.0 UZY-1-Soviet spaceflight tracking ship Kosmonaut Viktor Patsayev with F-2 tracking schedule for Science One via UAT Moscow Radio at 1917. Was 405 nm east of Montevideo headed northeast to assigned retrofire positon at 22 south 35 west, three weeks prior to Soyuz TM-9 rendezvous mission with the MIR space station. Was monitoring MIR orbits 22518 to 22594 enroute. RTTY 170/50. (Ricks, PA)

22398.1 JNA-Tokyo Naval Radio, Japan, with V CW marker at 0004 followed by Navarea XI warnings. (Bilodeau, IL)

22449.9 ROT-Moscow Naval Radio with news and navigation information for fishing fleets at 1430. RTTY 170/50. (Ricks, PA)

22463.9 UFB-Odessa Radio, USSR with traffic list and news at 1532. RTTY 170/50. Also monitored message traffic for UUVO-Soviet space tracking ship NIS Kosmonaut Vladimir Komarov enroute to the Baltic Sea via Leningrad. Was underway via an inland waterway system. (Ricks, PA)

23011.0 U2T working ABW (Forward), no reply. A8W (Rear) came up with a clear signal, U2T's signal was broken at 1746 in USB. (Kerrigan, IL)

The Scanning Report

Bob Kay
c/o MT, P.O. Box 98
Brasstown, NC 28902

Somebody's Listening

For millions of Americans, June is vacation month. We pack the car, lock the house, and venture out for some well deserved rest and relaxation. Prior to departing, we call our local police, stop delivery of the mail and local newspaper, and ask our neighbors to report anything that seems suspicious.

An elderly woman from New Jersey, followed the above guidelines to the letter. As a result, her home was robbed four times within 13 months. An insurance investigator discovered that the local police broadcasted the woman's absence over the police radio. As we all know, anyone with a scanner radio instantly knew that the house was empty.

As most scanner buffs already know, police calls are only one of many forms of radio communications. A few years ago, I wrote an article for *MT* that explained how easy it was to become an unwilling victim of a business radio transmission. The article was titled, "Scan or be Scanned," and it provided the reader with an inside look into the world of radio communications. Here are two paragraphs from that article:

1) You've called a plumber to repair a leaky pipe at your house. Like most of us, you're a little short on cash and use your credit card to cover the expense. The plumber takes your card, walks out to the truck and keys up his radio to contact the main office for credit approval. As a result, your name, address, the amount of the purchase and your credit card number are sent over the air as a business radio transmission.

2) The larger newspapers are now advertising a relatively new service called "Guaranteed Delivery." If your paper is missing, wet, or torn, a phone number is provided for the customer to order a replacement.

Basically, the service works like this: After receiving your complaint, the circulation department will enter your name, address and phone number into the computer. A printout is produced, identifying the road manager in charge of your district. A dispatcher then transmits the information from the printout to the road manager.

Traffic sent over the air thus contains your name, address and phone number. If you call the newspaper to stop delivery when you're going away on a trip, the stop and start date for paper delivery may also be transmitted over the air.

Are you feeling uneasy about calling a plumber or complaining about your paper boy? If so, perhaps you shouldn't read any further. It's going to get worse.

Regular readers of this column have already been warned about using cordless phones and baby monitors. But few people realize that phone answering machines can also be invaded by third party eavesdroppers.

If your machine responds to a "single tone beeper," the tones that are produced by your pocket sized beeper, can be replicated by simply whistling into the mouth piece.

Other answering machines can be accessed remotely by "tone dialing." With this method, you punch a code number on the key pad of the phone you are calling on. These, likewise, can sometimes be activated by whistling.

Calling a private ambulance service to your home for out patient care, can also produce radio transmissions that are filled with your personal information. Many of these medical taxis



Planning a vacation this month? Here are some tips on how to avoid high tech burglars.

are radio dispatched and the pickup time is almost always sent over the air. As a result, anyone who may be listening, will know when you've left your home.

When you begin to plan your vacation this year, here are three important points to remember: 1) Don't use a cordless phone to arrange your vacation plans. 2) Remember to unplug your baby monitor. 3) When you temporarily stop the news paper, or any kind of home delivery service, ask the company if they are using radio communications. If they are, ask them to relay your information by telephone.

Readers that live in, or near large cities, are invited to search across the following bands: 33.00 to 46.00, 150.8 to 162.00, 461.00 to 465.00, 502.00 to 512.00, 851.00 to 853.00 and 902.00 to 928.00 megahertz. I guarantee that the amount of personalized information being flung across the air will convince everyone to make their vacation plans with a sense of caution. You never know when somebody's listening.

Antenna Plans

In the April column, I offered a "do-it-yourself" set of antenna building plans. Detailed sketches and directions were provided for building a VHF/UHF beam, a long wire cordless phone monitoring antenna, a UHF Bow Tie antenna and a ground plane. Response has been great; however, there was one problem. The price of the plans is not \$19.00 but rather \$12.95 plus 1.20 book rate or 2.30 UPS. The place to order is DX Radio Supply, P.O. Box 360, Wagontown, PA 19376.

These are easy-to-make antennas utilizing common, easily obtained materials. Best of all, you don't have to have a background in electronics to build them.

Vehicle Tracking Frequency

As most of you realize, the Federal Communications Commission has established a nationwide radio frequency for stolen vehicle tracking systems. The frequency, which formerly

belonged to the FBI, was first published by *Monitoring Times* (See "Letters," February, 1989). But the company, "LoJack," was licensed to use it in Massachusetts and Florida for long term testing. Now that the testing has been a success, the FCC has assigned the frequency for use by law enforcement agencies.

However, several companies have already received FCC approval to operate a commercial vehicle tracking service on 908.00 MHz. In the near future, it will probably be possible to buy a vehicle tracking system in your local department store.

Treasure Hunt

This is the last month for someone to win Bob Grove's "Scanner Beam." The antenna features complete coverage between 30 and 960 megahertz, and it can be rotated for pinpoint accuracy with a common television rotor. If you don't want to erect a rotor, the Scanner Beam can also be used in a fixed position. Signals arriving from the back and sides will be slightly attenuated, but you won't miss any of the action.

For cordless and cellular monitoring, the "Scanner Beam" is a top performer that can pull in weak signals that other antennas might miss. To win one for your roof, simply answer the following clues:

1. In the February 1-April 30 Grove Catalog, what page features the "Scanner Beam"?
2. What year was the Electronic Communications Privacy Act (ECPA) passed into law?
3. Name the woman on page 90 of the February 1990 issue of *MT*.
4. As of January, 1990, the civilian aircraft band will include 136 to 137 megahertz. True or false?
5. Provide a frequency for the Space Shuttle between 250 and 260 megahertz.

Send your answers to the "Treasure Hunt," P.O. Box 98, Brasstown, NC 28902. The Scanner Beam can also be ordered direct from Grove Enterprises. Send \$59.95 plus \$3.00 UPS to Grove Enterprises, P.O. Box 98, Brasstown, NC 28902. You can also purchase the Scanner Beam with your Visa or Mastercard. To place an order over the phone, dial 704-837-9200.

Frequency Exchange

Kick off your shoes and grab a bottle of tanning oil. Our first stop is sunny California. Daniel Mingus, who is a crew member aboard the *USS Carl Vinson*, sent in over 18 pages of frequencies. Here's a sampling of what I have:

42.94	California Highway Patrol to Nevada State Police
45.30	San Fran. Police academy
139.575	Point Reys Naval Support Base, tactical
140.075	NIS talk around
140.950	Mare Island Naval Base Security
148.375	Naval Supply Center, Oakland Security #1
149.075	Security channel #1 Alameda Naval Station
149.725	Oakland Army Base, CO's channel
155.955	Alameda Sheriff, underwater rescue
165.215	FBI, San Fran. tactical
165.9125	Body mikes, Alcohol, Tobacco and Firearms agents
340.200	NAS Moffett Field tower ops.
413.025	CID Security, US Army, Presidio
453.725	San Quentin Prison

Dave's list also contains a comprehensive list of frequencies for the following: Naval Station San Diego, *USS America* (CVA 66), and *USS Enterprise* (CUN 65). If you want the complete list, I'll send it out via first class mail for an SASE and \$3.00 bucks.

Since this is vacation month, let's travel northward to Spokane, Washington. An anonymous reader sent in a very interesting antenna map. The map illustrates the locations of all the VHF Police base stations in the entire state of Washington. Since the original map was a poor quality print, I had it enhanced and enlarged to cover a full page. If you're interested, it's free! But there is a catch. I'll need a business size, #10 SASE. Hurry, before I change my mind.

From Washington, we travel southwest to Kansas. David Sterns, of Lenexa, Kansas, has provided approximately 150 frequencies for our scanning pleasure. The list includes frequencies between 29.60 and 463.00 megahertz. Would you like to try a small sample? I thought so:

29.66	Kansas Amateur Radio Club
33.38	Phillips Pipe Line Co.
35.56	MCI Airsignal
37.62	Kansas Power and Light
39.46	Kansas Highway Patrol
152.84	Southwest Bell Telephone
160.665	Burlington Northern RR
450.875	Taft TV and Radio
462.475	Sprint Communications

Did that whet your taste buds? If so, you should get to the mailbox in a hurry. It's another free list. Just send an SASE and I'll pick up the tab.

As we prepare to leave Kansas, I've just received a late invitation from a subscriber in Arcadia, California, inviting me to visit Disneyland. Let's check out the following frequencies:

154.570	Security
154.600	Submarine Attraction
154.625	Paging
464.5375	Maintenance
464.6425	Security
464.325	Security
469.325	Security



If you live in or near a large city, check out the business radio bands. You may be surprised.

464.4125 Maintenance/Custodial
464.7625/469.7625 Monorail
464.5125/469.5125 Special Events

If anyone can add to this list, Lauren would like to hear from you. Send your frequencies to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902.

Guard Tones and Cellular Phones

Michael Cook from Scarborough, Ontario, recently took his Pro-34 to a local radio repair shop. Mike explained that for \$125 he had the "guard tone" removed from Toronto's police channel. (In Toronto, the police department has a guard tone on their frequencies which produces a loud noise and makes the scanner radio lock-up).

However, the technician could not restore the unit's cellular coverage. Although he had done the mod many times, clipping the diode on Mike's radio had no effect.

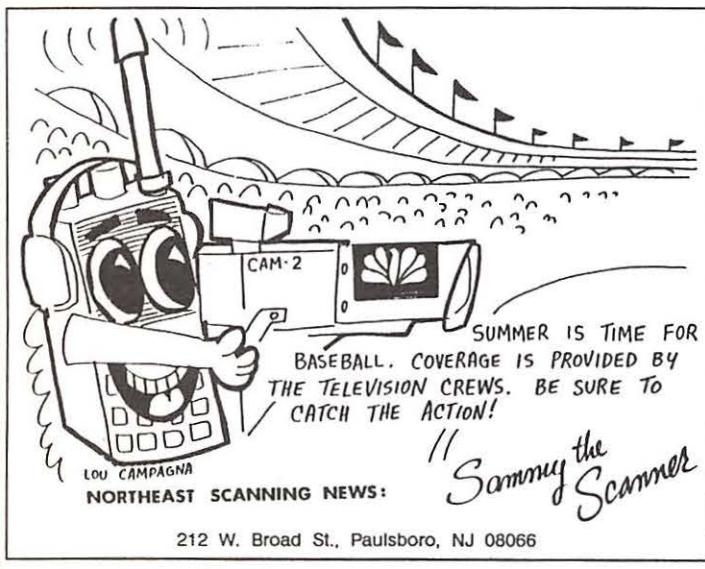
Mike was upset, because he had purchased the radio mainly for its potential ability to monitor the cellular bands. If anyone has experienced a similar problem, I'd like to hear about it. Send your comments to the Scanning Report, P.O. Box 98, Brasstown, NC 28902.

Scanner Mounts

In a recent batch of mail one *MT* reader sent in a magazine clipping that pictured a mobile, compact disk mount. At the bottom of the picture was a short note, "Looks like a great scanner mount."

The clipping was from a company called Crutchfield [See "Catalogues," May *MT*). After contacting Crutchfield's president, I received their CD mount for my review and comments.

The mount features a round metal base with four holes. The stem incorporates a ball joint that enables the mounting platform to be positioned for easy viewing. The mounting platform measures five inches by five inches and is suspended by four rubber cushions. The idea behind the design was to prevent road vibrations from adversely affecting the tracking mechanisms of CD players.



Although the mount will not support a full size scanner radio, I did find it quite suitable for holding hand-held scanners and small accessories. By using velcro strips, the mount provided a convenient and secure location for my frequency counter and extension speaker.

If you're interested in purchasing the mount, the \$24.00 price tag won't bust your wallet. The catalog number is PDS-1. Here's the address: 1 Crutchfield Park, Charlottesville, VA 22906-6020.

Before placing your order, remember that the mount is intended for CD players. Its suitability for scanning depends upon your creativity. If you discover a more innovative way to use the mount, don't forget to let me know.

Cops on Bikes

No, I'm not talking about motorcycles. In the cities of Seattle, Washington; Tucson, Arizona; Portland, Oregon, and San Francisco, California the police are patrolling on bicycles. In the city of Tucson, the bicycle patrol reported a one-third increase in arrests over the standard foot patrol.

According to the Tucson police, bicycle patrols can ride up to unsuspecting lawbreakers without being noticed. "No one realizes that we are cops," a police officer stated. "They think we are average citizens out for a leisurely ride on our bicycles."

In addition to their crime stopping abilities, bicycle patrols also save the taxpayer's money. The cost of a patrol car averages around \$20,000. Furnishing a bike with a radio, lock, repair kit and first aid kit costs about \$500.

I don't know about you guys, but I can't wait to monitor my first high speed "bicycle chase."

Picking on the President

I'm concerned about the President's taste in airplanes. A case in point is the new "Air Force One." I'm specifically talking about the two Boeing 747-200Bs that carry a price tag of \$650 million.

If the price sounds ridiculous, don't start laughing just yet -- there's more. The two planes needed a place to sleep. So the government built a hangar at Andrews Air Force Base. The cost -- an additional \$50 million.

The planes also needed tender loving care. More commonly referred to as service and maintenance, the cost of maintaining the planes requires another \$100 million.

Each plane has seven bathrooms, two kitchens, 85 telephones, a stereo system, eight television screens, four computers, two copying machines, an emergency room and nearly 60 antennas.

After the President announced his dislike for broccoli, produce growers sent nearly two tons of broccoli to the White House. I suggest that someone send the President a commercial airline ticket. I'm quite certain that even if he were re-elected, his air fare for eight years would not equal the 800 million dollar cost of Air Force One.

Next month:

Grab your favorite lawn chair, turn on the grill and get ready for a sizzling hot article on cordless phone monitoring. In the meantime, throw a steak on for me -- I like mine well done.

RADIO SCAN

MAGAZINE

LA REVISTA INTERNACIONAL DEL RADIOAFICIONADO

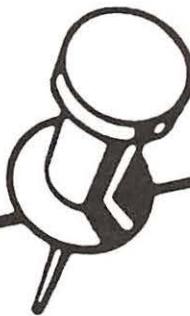
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what's new?



Restoring Classic Radios by Mail

Over in Woodacre, California, Dan Healy and company have developed a unique way to assist hobbyists in restoring classic radios. By classic radios, we mean anything "up until the mid 1950s."

Say you've got a nice old Crosley 1936 cathedral radio. It looks great. But it doesn't work. That's where the Classic Radio Service comes in.

All you do is contact Dan and tell him the name and model number of your radio. Dan will even help you determine what kind of radio you have if you are unsure.

And then, for a price starting at \$75.00, Classic Radio Service will take you from one carefully explained step through another from basic cleaning through alignment until you have a completely functional, fully restored classic radio. Dan even sends you the parts you'll need.

For more information on this unique service, contact Dan at 25 Maple Road, P.O. Box 764, Woodacre, California 94973 or call 415-488-4596.

Shortwave Logsheets

One of the secrets of successful DXing is record keeping. And one

way to keep your sessions behind the dials organized is log sheets.

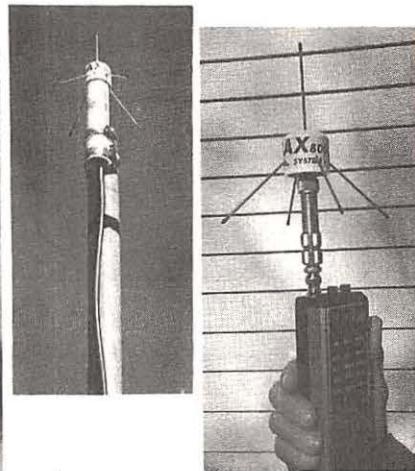
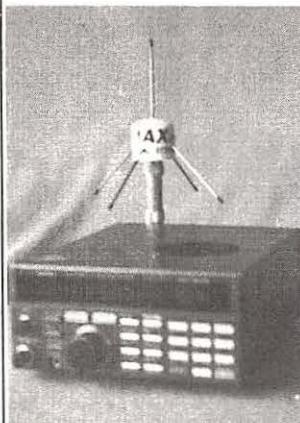
DX Radio Supply is offering a package of professionally prepared logsheets for just \$4.99. There are fifty (50) sheets in each pack and each sheet is printed on both sides -- which comes down to .0499 cents a side -- less than that if you copy your own. Altogether there's enough room for some 2,000 loggings per package including date, time, frequency, station name, location, mode or language, signal strength and remarks. All sheets are three-hole drilled for easy filing.

To order yours send your check or money order for \$4.99 plus 1.20 postage or 2.30 UPS to DX Radio Supply, P.O. Box 360, Wagontown, PA 19376.

Cellular Listening Antenna

When scanning the 800 MHz cellular phone band, many listeners are only hearing a fraction of the signals available. According to Thomas Bernie at Cellular Security Group, that's because "rubber-duck and other broad band scanner antennas perform poorly at the higher frequencies."

As a result, Bernie is now offering an inexpensive mono-



band 800 MHz antenna that mounts directly atop your hand-held scanner. "When mounted outside, it is far superior to my discone," says Bernie.

Bernie's antenna, the MAX800, is available for just \$19.95. There is no charge for shipping and it comes complete with a money-back, no-time-limit guarantee.

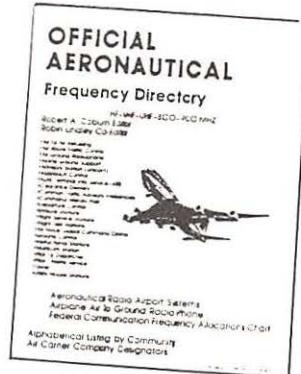
Optional Type N connector models or long 38 inch PVC mounting masts are available for an additional \$5.00.

For more information or to order yours, write Cellular Security Group, 4 Gerring Road, Gloucester, MA 01930 or call 508-281-8892.

Aero Freqs

After public safety monitoring, listening in on air-to-ground communications seems to be America's favorite scanning target. The *Official Aeronautical Frequency*

Directory by Bob Coburn is by far the best aeronautical directory we have ever seen, not just for scanner buffs but for shortwave listeners as well.

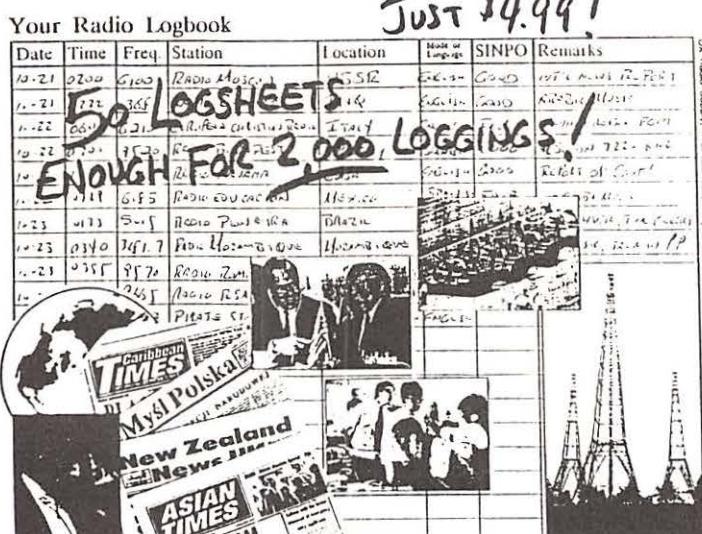


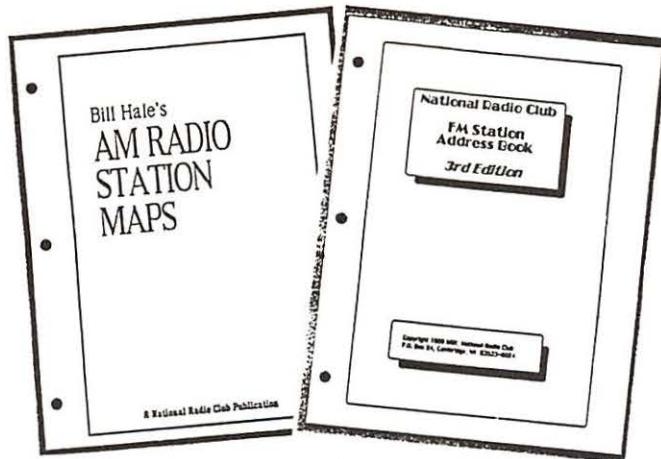
Coburn has really done his homework. Arranged alphabetically by state, the listings include type of service, name of licensee or agency, location, call sign, frequencies and use.

Not only are the common commercial (FAA) air-to-ground listings provided, but included as well are military, radiotelephone, Civil Air Patrol (CAP), international airline flight networks, aircraft manufacturers, 800 MHz airport trunking communications and more.

Tables of frequency allocations, airline company voice designators and nationwide frequencies add to the utility of this valuable reference for aircraft monitors.

The *Official Aeronautical Frequency Directory* is available from the author (\$21.95 plus \$2.05 shipping from Official Scanner Guide, PO Box 712, Londonderry, NH 03053) and other MT advertisers.





New ICOMS Postponed

Word has reached *MT* offices that the long-awaited IC-R1, IC-R100 and IC-R72 receivers are going to be even longer-awaited.

According to sources close to ICOM, there are no technical problems with any of the units, nor legal problems with the scanning features. Production delays are due to scheduling only, with other products presently taking priority.

MT will let you know when the products are finally being shipped into the country, but don't expect them for several months.

Station Locators

Founded in 1933, the National Radio Club is the granddaddy of medium wave and FM DX clubs. Over the years, many publications from this respected group have assisted broadcast band listeners.

Bill Hale's new *AM Radio Station Maps* provides a graphic look at the 540-1600 kHz US and Canadian AM band by showing every 10 kilohertz allocation with a separate map, listing all licensees on that frequency.

Featuring an easy-to-read, large-type format, over 5000 stations are clearly identified and verified as of January 1990.

In similar fashion, but

Official Aeronautical Frequency Directory



SAVE \$2.00!

This 416 page guide covers HF, VHF, UHF 225-400 MHz military, 450-470 MHz and 850-950 MHz frequency ranges. Frequencies are listed by community, service, license, frequency, call sign and comments. Includes general system info, FCC frequency allocation charts, air carrier company designations and info and freqs on the new 800 MHz mobile airport systems. Limited time, \$19.95. (This book \$1.90 USPS.)

SHORTWAVE LISTENER'S ANTENNA Handbook



Any receiver can bring in impressive signals with the right antenna in place. Proven author, Robert Traister, explains antenna features and requirements, tools, materials, construction and installation practices. Build vertical, horizontal and directive antennas, tuners, couplers, portable ones, too. This step-by-step classic, \$12.95.

SCANNER MODIFICATION HANDBOOK

20 tested scanner modifications by Bill Cheek. Plenty of photos and charts. Easy enough for the average amateur hobbyist. Just, \$17.95

The CITIZEN'S GUIDE to SCANNING

Popular *MT* columnist, Bob Kay, departs with 25 years of experience. He starts with the basics, then discusses government, business and personal scanning, covers equipment and the shack and frequency lists. Must have at \$12.95.



Please send your check or money order to: (\$1.20 book rate shipping each book. PA residents add 6%).

DX RADIO SUPPLY

PO BOX 360 / WAGONTOWN, PA 19376

without maps, Mike Knitter's *FM Station Address Book* offers locations, frequencies, call letters, addresses and antenna powers for all of the thousands of FM broadcasters in the US and Canadian 88.1-107.9 MHz spectrum.

Stations are listed alphabetically by city, and even the

operational status of newly-licensed stations is shown.

AM Station Maps by Bill Hale is \$11.95 postpaid from NRC Publications, PO Box 164, Mannsville, NY 13661. *FM Station Address Books, Third Edition*, by Mike Knitter is \$10.95 postpaid from the same address.

MINIPROP Version 3 (Propagation Software)

by Sheldon C. Shallon, W6EL (Floppy disk and documentation manual; \$49.95 postpaid in North America from W6EL Software, 11058 Queensland Street, Los Angeles, CA 90034-3029)

For serious DXers -- SWLs and hams alike -- this is the propagation program. Designed for IBM compatible computers, the operator simply loads the program disk (order 5-1/4" or 3-1/2") and follows the menus. It's really that simple.

The SWL or ham needs only enter his own geographical coordinates (once for it to be saved) and the current sunspot number or solar flux (as heard from a WWV transmission on 5, 10 or 15 MHz); this powerful program does the rest.

While other MUF (maximum usable frequency) predictions predict paths with some accuracy, MINIPROP adds signal strength predictions as well on any frequency between 3 and 30 MHz by taking into account the effects of the D, E and F ionospheric layers.

Once you enter the locations of any two global points (probably including your own), the date and the sunspot count or flux, MINIPROP immediately computes for each frequency and at every half-hour interval: predicted signal strength (in dB above 0.5 microvolt reference), take-off (radiation) angle, optimum frequency band, beam headings, path length, sunrise/sunset times for the path terminals, grayline directions and other related information.

The data from this menu-driven program are all displayed on your computer screen; MUF and signal strength predictions may be printed out for your hard copy records. A flexible utilities capability allows the user to set a wide variety of parameters for his own use.

The "DX Compass" utility provides information on 12 different compass bearings, alerting you to what bands are open at any time of day. An on-screen atlas provides custom coordinates and call-sign prefixes for more than 350 world locations.

Used successfully by government agencies and hobbyists alike, MINIPROP can be used to print out beam headings from your location to all 350-plus world locations. For even faster prediction computation time, MINIPROP supports an optional 8087, 80287 or 80387 math coprocessor.

If you have been looking for an ideal propagation program, look no further. You'll find it in the MINIPROP.

Summer Sidelines

What is it about summer that makes us want to change our lives so drastically? Why do we put away the most time-worn habits to take on new and different modes of operation? What is this tendency in our species that drives us to take off our tweed suits and wingtips only to don brightly patterned Hawaiian shirts and sandals?

Why do we tune away from Brahms and Beethoven to bask in the harmonies of The Beach Boys? Can anyone explain why the opposite sex (whichever one that is) looks so much better with a suntan?

You're rambling more than usual, Uncle Skip...

Simplest of answers, Old Son! It's summertime, Bunkey. Time to put the top down and cruise through life for a few months, take some time off from all that drudgery we put ourselves through to get the rent paid.

This may be hard for most beginners to fathom. But even the wonderful monitoring hobby we all share can become a real drag. After a hard winter at the dials, it is good for even the most hardened DXer to kick back and get some perspective.

This does not necessarily mean putting all the toys of winter away. Rather, it means seeking new and different summertime adventures. So this must be the walk down the sandy beach that leads unmistakably to...

UNCLE SKIP'S BEGINNER'S GUIDE TO SUMMER DX FUN

There are dozens of ways you can modify your radio habits during the summer months. But let's take a look at a few interesting diversions that might be especially neat for beginners and old-timers alike.

TV DXing

One of the most obvious things about summer is that the weather changes. Sometimes very drastically. The bizarre isobars of summer can create some exciting DX phenomenon, especially in the VHF (Very High Frequency) range. VHF is the land where TV signals 2 through 13 dwell.

In the summer months, especially in early morning and early evening, the atmosphere can form up into layers of warm and cold air. These layers form ducts, or pathways that radio signals, particularly in the VHF band, can follow. Signals can travel along these ducts for extreme distances, well beyond that normally expected by the transmitting station. So then, under certain conditions, your TV set can pick up stations from many many miles

away without benefit of cable or a satellite dish.

Pretty neat, huh? As a matter of fact, you don't need any fancy equipment at all to log TV DX. Any old TV and a set of rabbit ears will get the job done.

Give this little experiment a try. Get up one morning just a bit after sunrise, before the air starts to warm up too much. Turn on your rabbit ear-equipped TV set to channel 2, 3 or 4, whichever one is not normally occupied in your local coverage area.

Now, just sit back and watch the static for a while. As the day begins to warm up, if ducting occurs, you stand a real good chance of picking up a television station from several states away. Like most forms of DXing, patience is a virtue. But hang in there, Sancho. If you begin to pick up signals on these channels, begin to move up the band through channels 5 through 8.

Most ducting phenomenon tends to tap out as you head higher up the band. But many neat catches await you. Often, conditions will only give you sound or the picture, not always both. Regardless, take note of what you find. Some folks take pictures of the station IDs if they are lucky enough to come along. In this modern VCR world, it might just be possible to catch your signals on tape by putting the VCR in line between your TV and the rabbit ears. If you do this, make sure you are using the VCR's tuner and not the TV's.

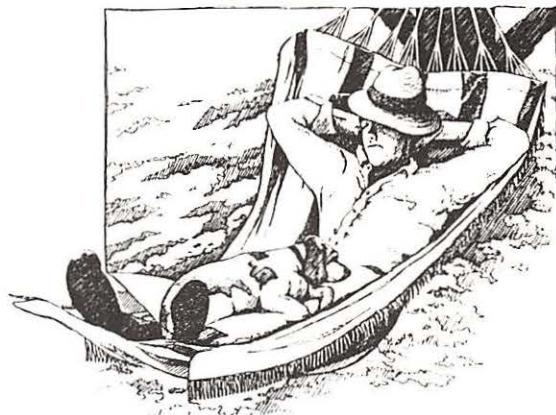
If you are fortunate enough to pick something up, you are going to want to make every effort to send out a nice QSL report to the station. While ducted signals represent a fairly common anomaly, the reports still blow the socks off most station engineers.

You may have to do a little detective work to track down the station's address. However, if you can narrow the signal down to its particular network (e.g., NBC, CBS, ABC, PBS) you can then call your local "sister" affiliate station and get a good mailing address.

TV DXing is very challenging, but it is also extremely rewarding. Remember, kids, the key to TV DXing is up and coming temperature changes, usually found mornings, evenings, or at the onset of a storm front. By the way, folks, it's fun, it's different and it's summertime.

Weather Watching

As we stated earlier in the program, Summertime brings about some very interesting weather changes. Rapid, often violent



What is it about summertime?

weather patterns make for some very exciting radio monitoring. So first off, it's fun just to monitor the weather. Then, when you have found out what's going on, you can find some memorable monitoring based upon that weather information.

In addition to picking up weather data from your local TV and radio or The Weather Channel on cable, you might use your hobby radios to dig a little deeper. You can use your worldband receiver to check out aircraft weather data (usually the most comprehensive) on 6604, 13270 and 13282 kHz or U.S. Coast Guard marine weather on 13113.2 kHz.

Scanner owners can add to their weather information by monitoring their nearest NOAA weather radio broadcasts on 162.40 through 162.55 MHz or, if you live near a military installation you can check out 255.4, 272.7 or 342.5 for flight weather reports.

Once you have identified an area of extreme weather, you can then use your imagination to track down interesting listening. Let's set up a hypothetical situation.

You have just heard through one of your weather data sources that a really big hurricane is going to move up the eastern seaboard of the United States. When you have located the cities most likely to be affected, you might try monitoring the stronger 50 kW AM broadcast stations that emanate from that region.

You could also use your shortwave rig to give a listen to the NOAA Hurricane Hunters on 5562, 6673 and 13267 kHz or perhaps the FEMA emergency net at 10493 kHz. There would also be value in checking out the various coast guard frequencies. Most of the important HF (High Frequency) Emergency management frequencies (there are hundreds) can be found in Bob Grove's *Shortwave Directory* published by Grove Enterprises and available through many of the advertisers here in *Monitoring Times*.

Now, let's say that the weather emergency hits a little closer to home. Even a good old fashioned summer thunderstorm is going to generate some good scanner monitoring. Obviously your local police and fire

New AOR Scanner

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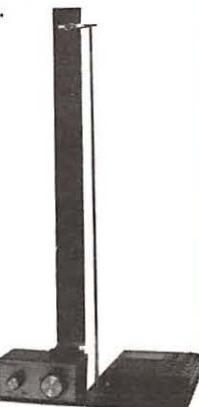
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time drive.

Remember, folks, it's summertime, lighten up a bit. Spend some time with the family. Get reacquainted with your significant other. Come up out of the basement and catch some rays. Did I mention that you can attract some interesting beachside blanket company by tuning in BBC? You, too, can be THE HERO OF THE BEACH!!

mt

Antenna Spotting

Many folks spend a good portion of their summer getting to someplace to have fun. While on the way, to pass the time, you might find it fun to keep an eye out for neat antenna installations. Driving along the interstate is sure to turn up one or two spectacular commercial radio or TV towers.

A trip down I-95 from New Jersey to Washington D.C. will give you a gander at some really well thought out, super duper, amateur radio towers. Someday I am going to have to find out why these folks build their homes so close to the highway.

Lately, I have been keeping my eye out for satellite dishes. You might want to snap a few pictures and take a few notes. Who knows, you might accidentally break the next great radio intrigue in the "Outer Limits" column by some diligent roadside antenna spotting. Just one more fun way to enjoy radio on a summer-



Who knows what you might turn up on an antenna spotting expedition?

frequencies are going to be humming. But don't forget your area public services as they scramble around trying to restore power.

Also, remember that some radio hobbyists do some excellent public service during emergencies. Monitoring the amateur radio bands, both HF and VHF, will reveal some well-organized disaster communications services. And if listening isn't a big enough kick, you can work toward a ham license and become part of the fun.

Of course, speaking of fun, weather monitoring is hot fun in the summertime. (Where have I heard that before?)

Special Events Stations

Special Events Stations are amateur radio stations operating to commemorate or celebrate many interesting and sometimes funny events. These stations issue special QSL cards and certificates that are great fun to collect for hams and shortwave listeners alike.

While you can find special events stations on the amateur radio bands almost any time of year, they tend to proliferate during the summer season. If you tune around the General Class portions of the 20 and 40 meter ham bands (14225-14350 kHz upper side band and 7225-7300 kHz lower side band respectively) on any Saturday or Sunday morning, you should be able to log at least two or three special events stations.

Many of these stations operate at annual events making it fun to collect successive certificates. There will be a special event station on the air from the *Monitoring Times* convention in Knoxville this year. Another favorite of Uncle Skip's is W0BXR which can be heard the last full weekend of July. This station is set up by The Davenport Radio Amateur Club to commemorate the life of jazz musician Bix Biederbecke. You will also find stations that celebrate centennials of cities, gatherings of people for all manner of celebrations, even operations from major sports events.

Needless to say, these stations just love to send out confirmations, usually in the form of a large commemorative certificate. While monitoring or working the special events station, stay tuned for details on the address and specific QSL information. This process always requires a SASE because these are volunteers with little or no funds to make this party fun.

If you want to get a jump on who is operating special events stations you can check with neighborhood ham radio operators or give a look at the special events calendars in amateur radio magazines such as *QST* or *73*. But, in the summertime, it's often just fun to cruise the dials and see who is out there. No pressure, no hassles, just good time summertime fun playing radio.

Your questions answered

"River 16, River 16, you are cleared into area R-2905 for your bombing run, hold over Powell intersections 10 minutes then proceed in at 100 feet for a low level run, cleared to bomb target, Powell Bomb Plot, out."

"Powell Bomb Plot, River 16, weapons away, clearing R-2905 at this time, River 16 out."

Yep, if you know the right frequencies, you can listen to exciting communications such as the above and hear military jet aircraft exercise their mighty power sitting at the house listening to your scanner. It is just a matter of being at the right place at the right time.

One of our readers, Mike Conners, wants to listen in and writes, "I am an avid reader of *MT* and especially enjoy the federal file. I am writing to seek assistance in tracking down some frequencies."

Mike recently found a USAF facility that is located in his area. He says it is a very small facility with about 75 personnel total stationed at the site. The installation is very secure and there appears to be a number of low-level radar tracking antennas scattered about. The facility has no runways or other provisions for aircraft to be stationed there.

He has been told that the facility is maintained as a practice range for simulated bombing passes near the installation. It would appear that this is true as it is quite common to have B-1 aircraft making several low altitude passes near the installation.

Signs around the facility indicate it is an Evaluation Group of the Strategic Air Command. Local phone books list it as DET 16 1-CEVG OPRTN S SITE. The physical location of the facility is just south-east of the town of Powell, Wyoming.

Mike's impression is that there must be some type of communications taking place between the aircraft and the facility during these simulated runs. The only problem he has is he can't find the frequencies.

He has made several sweeps of the UHF Military band with a Yaesu FRG-9600 in an attempt to find them without success. He does admit the FRG-9600 is not the greatest rig to use in this type of sweep, and he may have missed communications altogether because of the way the receiver scans.

"Can you help me with any specifics on where I might find the frequencies to listen to these folks? I have run out of ideas on where to find them. Any information you could provide would be a great help."

Well, Mike, you have come to the right place. I have the information you are looking for. The site you described is the Powell Bombing Plot. Yes, they have a

discrete frequency used by SAC aircraft when they are active on the bombing range. In fact, there are quite a few of these bombing plots throughout the US and several more in your area, Mike. Here is a summary of the information I have.

Richmond Bomb Plot, VA	354.3
Holbrook Bomb Plot, AZ	356.8
Wilder Bomb Plot, ID	258.2
Powell Bomb Plot, WY	234.8
Forsyth Bomb Plot, MT	363.9
Dickenson Bomb Plot, ND	396.925
Scobey Bomb Plot, MT	To be assigned
Belle Fouche Bomb Plot, SD	381.1/266.2
Conrad Bomb Plot, MT	258.3/271.9
Havre Bomb Plot, MT	Inbound
Lewiston Bomb Plot, MT	238.2
Baker Bomb Plot, MT	288.6
Rawlins Bomb Plot, WY	226.0
Riverton Bomb Plot, WY	258.2
Hastings Bomb Plot, NE	300.6
Ashland Bomb Plot, ME	354.3
	356.8

Now for Mike and our other readers, it might be a good idea to listen very closely to those frequencies and see if the controller or pilot announce other frequencies they are shifting to. In fact, a lot of times military aircraft band monitors can use this method to learn of new mil aircraft frequencies in their area and increase their military frequency list. Most of the time aircraft will announce frequencies they are switching to.

The only exception to this rule is when they say that they are switching to "button 2, channel 2, etc." This means that the radio has frequencies preset in them and the pilot is switching to the preset channel he has announced. Most military UHF radios can carry up to 20 preset channels. This helps a pilot get better control of things in an already busy cockpit. It is much easier to switch to preset 20 than trying to look down and dial in 396.925, for instance.

A good idea that you might want to keep in mind is if you hear a pilot announce a preset's actual frequency, be sure to write that down, along with the pilot's aircraft call sign and who he was talking with. If you happen to live near a military base, after a period of time you will probably build up a good list of presets and the accompanying frequencies. This will really help you to follow the action in your area.

Presets in aircraft for a given outfit do not change very often within a given area. Usually the only time a military aircraft unit will change their presets is if they deploy to another area for an extended period of time.

Another opportunity to get your area's presets is when the base has an open house, usually the planes are opened up and the frequency cards for that aircraft are in plain

view for you to see. Believe me, if they don't want you to see their operating frequencies, the cards will be covered so you can't see them. Sometimes the pilot might also be standing next to the plane answering questions. A few have even pulled their frequency cards for me to copy. Friendly guys, huh.

Thanks for the question, Mike, and be sure to report back to us what you hear at the bomb plots in your area. I am real interested in some of the call signs you hear checking in and any other frequencies you stumble on. Good luck and hope to hear from you soon.

LA Fed Stuff

California state monitor Daryl Asplund in Van Nuys has sent along a nice list of federal frequencies from around the LA basin area. I hope you check in often, Daryl. Our readers appreciate your efforts.

Secret Service:

Nationwide-165.7875, 165.375, 165.2125, 164.650
Los Angeles Office-166.400 and 166.200 repeater outputs

Internal Revenue Service:

418.225 Los Angeles Repeater
418.175 Los Angeles Simplex

U.S. Customs Service:

163.125 Los Angeles Airport Repeater/Simplex
Drug Enforcement Agency (DEA):
418.625 and 418.900 Repeater outputs

AD MEN or AVMED IDed

Back in the January issue, Daniel Burn of Alexander, Virginia, discussed the Alpha Bravo UHF mil aircraft frequencies he has heard. Dan heard a reference to AVMED or AD MEN on the A/B frequencies. Well, Jay Lamar believes what Dan heard was actually the word "Admin," short for "administration."

Jay also enjoys monitoring the Alpha/Bravo frequencies but, until the January issue hit his mailbox, did not have all ten of them. Recently he monitored Air Force Two working Leo Lion/Auto Sale/ Headliner and others first on 397.050, then 366.0 and finally on 397.050 again.

Glad we could help, Jay, and thanks for the update. Please check in often.

New NOLA Freqs IDed

Gerald Babin in New Orleans liked a recent list of fed freqs sent in by Larry Van Horn. In fact, he says that previous to that he had been searching high and low for fed freqs in New Orleans, but to no avail.

Our Pelican State monitor works for NAS

New Orleans-base security department and has sent in a couple of corrections to the list that Larry sent. They are as follows:

138.700 Channel 4 Repeater output Navy New Orleans
Security
140.820 Channel 1 Navy/Air Force/Crash/
Quarterdeck(common)
140.100 Channel 2 NAS Crash crews (Control
Tower/Fire Department)

Gerald says that channel 4 is strictly the Navy Security Police on the base. Channel 1 is mainly used by Air Force security police although navy security frequently uses channel 1 also. Channel 1 on the base is common to everyone including: Commanding Officer, base security, quarterdeck (base headquarters), Officer of the Day (OOD), and the Command Duty Officer (CDO).

In addition to the PRO-2004, Gerald also has a Kenwood TS-140, PRO-32, AEA PK-232 MBX, Yaesu Ft-209RH two meter HT and Tandy 102 Laptop. Gerald's ham radio call is NSMCJ. Thanks for the update, and I hope you get a chance to bump into Larry Van Horn.

Frequencies from Aerospace Valley

Dale Punter in Lancaster, California, has checked in with some very interesting frequencies from the Antelope Valley, he calls it Aerospace Valley of California. Dale says he is an avid scanner listener and says that his area of California is the place for some fascinating UHF aircraft scanning.

Some of the aircraft Dale has monitored include the B-2 Stealth bomber, the B-1B bomber, the SR-71, the F-117A Stealth fighter and just about every other aircraft in the USAF inventory. Dale's proximity to Edwards AFB, China Lake Naval Weapons Center and Air Force Production Plant 42 keeps his PRO-2004 going almost nonstop.

Dale would like to get in touch with other aircraft enthusiasts in the southern California area. He can be reached at 831 W. Avenue L, #66, Lancaster, CA 93534.

He also commented on the February issue list of frequencies by Phil Cegielski. Dale says Phil should try 345.5 for "Strike," but he can't help him with his other request. Dale has sent some of the more interesting frequencies heard in his area. They include:

295.1 This is Edwards Approach Tactical freq for the Panamint Valley, not a "Red Flag" as Phil thought. (Agree, Phil, it is not listed in a "Red Flag" list I just got.-Rod)
272.0 This is "Sport" radar control for R-2515, aircraft test area, VHF-132.750.
304.0 This is Edwards Command Post, call sign "Conform"
381.1 Leach Lake Range Primary
344.8 Eddy Tactical for Superior Valley, the F-117s fly night missions into this range.
385.7 "Dutch" missions, SR-71s out of Plant 42, this is also Aerial Refueling (AR) backup (What do

you hear now that the SR-71 has been retired.-Rod).

298.3 "Dutch" air refueling primary
290.7 "X-Ray" mission, TR-1s out of Plant 42
345.5 "Rhino" mission, F-4s out of El Toro
296.5 "Frontier," call sign for Western Space and Missile Center, Vandenberg
280.1 "Viper" mission, B1-Bs out of Plant 42
300.8 "Eagle" mission, F-15E out of Edwards AFB
379.7 "Talon" mission, MC-130Hs that have been specially modified for the US Special Forces and are being tested out of Edwards.
364.2 "Darkstar," NORAD channel 21 (Common throughout the US)
319.4 Military Airlift Command (MAC), Norton AFB
123.25/123.325/123.425 Lockheed operations in Burbank and Palmdale
123.3/123.5/123.525 Northrup Operations
123.7 New Palmdale Tower frequency
141.1 Army aviation at Edwards
140.0 "Thunderbirds" airshow frequency
114.95 "Thunderbirds" tactical frequency

Thanks, Dale, for the great freqs, hope you check in often and watch for an interesting article in the future on Operation "Red Flag." For Phil Cegielski, Dale would like you to contact him at the address for him I mentioned previously.

Speaking of Phil, this Old Salt's for you!

A bunch of you decided to reply to Phil C's questions in the February issue, and we both appreciate it. Ed Flynn says that "Old Salt" is the USN code name for the carrier "Nimitz." Each carrier has a discrete frequency for "Strike" (that is a carrier bound aircraft preset usually -Rod) and "Marshall" which are changed for every deployment.

STRIKE on an aircraft carrier is similar to an ARTCC on land. MARSHALL on an aircraft carrier is equivalent to a land based approach control. MARSHALL controllers use specific holding points for the aircraft waiting to land on the carrier.

Ed says he has also heard the call sign "Mother" in the San Diego area, but he does not know what it refers to. "I guess it might be San Nicolas Island," says Ed. "I have no real basis for that assumption except that it is in the general area of UHF coverage."

But folks, hold on. Jay Lamar comes to the rescue and says that "Mother" is a generic call sign for the ship the aircraft is headed for. Thanks, Jay, for solving another mystery and I am looking forward to your list.

Now Ed Flynn has also sent a couple of San Diego area UHF frequencies. They include: 314.7 308.1 289.9 285.7. He doesn't know the call signs used on these frequencies.

Well, folks, that is it for this month. If you didn't see your area covered this month, send in a list of what you have and maybe someone else will add to it. This month is a good example of how that works. Thanks to all and it is time for a cubo or three -- CU next month, Rod.

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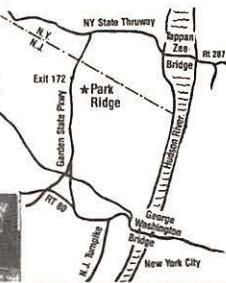


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Monitoring the HF Aero Bands

In the previous installment of Plane Talk we promised some information about aero monitoring on shortwave (HF) for newcomers to the hobby -- as well as a review of the subject for experienced monitors. So take notes, there will be a short quiz later.

First of all, many newcomers to international HF aero communications monitoring have asked why this particular mode is used instead of VHF. Consider the following: VHF, even on good days, can be heard at a maximum of six to seven hundred miles -- and that's stretching it. For the most part they just slide through the ionosphere and disappear into space.

The main reason that shortwave is utilized for international air-ground-air transmissions is because these radio waves "bounce" off the ionosphere and are finally reflected back to earth, perhaps halfway around the world from their original site of transmission. Consequently, a ground station may be able to "work" a flight that's several thousand miles away. This can vary according to propagation conditions, however.

Check the specs BeFO' you buy!

We've received letters from more than a few new subscribers who, having become interested in learning to monitor the HF aero bands, rushed out and bought a shortwave receiver. When they brought the receiver home and turned it on, they found out to their dismay that their receiver was missing the one element very necessary to be able to receive the aero bands -- a BFO.

The letters "BFO" stand for "Beat Frequency Oscillator" and without one, reception on the HF aero bands is completely unintelligible -- sounding rather like Donald Duck in one of his most frustrated moments. Why? To make a long story short, almost all aero shortwave transmissions are in Upper Sideband mode. Without getting too technical, it's sufficient to say that a BFO is necessary to properly "decode" the incoming signal in this mode and make it understandable to the listener.

It would also behoove you to purchase a receiver with a digital frequency display. With it, you can either manually dial up or push buttons to enter the desired frequency and see it displayed right in front of your eyes. It's not too much fun playing frequency roulette with an analog (nondigital display-equipped) shortwave set -- especially if you're just starting out in the hobby and your frustration tolerance is on the low side.

Receivers with a BFO and a digital frequency display start at about \$175 (brand new) and the sky's the limit if you want to go

hog-wild (and have the dollars with which to go that way). However, before buying a brand-new receiver with all of the bells and whistles for your very first go at it, it's a better idea to buy a good used unit. Your best bet is to go to a hamfest/swap/flea market, not your local garage sale. Most hams treat their receivers very tenderly and you can be pretty sure of picking up a good piece of equipment at a ham fest.

Antennas? There's two ways to go. If you live in an apartment -- as this writer does -- an outdoor antenna is out of the question in most cases. Grove Enterprises has an excellent indoor antenna called the Grove Hidden Antenna System at a very reasonable price. Also, the extendible whip attached to your receiver is, in many cases, sufficient to pull in good signals by itself. However, if an outdoor antenna is at all feasible, go for it, as you'll find that reception is usually vastly improved.

Aero (air/ground) transmissions on HF are found in the 2-22 MHz bands as follows:

2851-2998	10018-10096
3004-3497	11279-11396
4654-4687	13261-13357
5493-5676	17894-17961
6526-6679	21940-21997
8819-8957	

Yes, there are aero transmissions heard outside of these bands, but the above frequencies are more consistently active. We'll discuss the others at another time.

In the next installment, we'll talk about the transmissions you'll hear on the HF aero communications bands.

Manuals and other publications

As we've discussed many times previously, there are quite a few publications available that are useful aids for those of us who are aero band monitors. While we've talked about some of them in this column, Eric Lambert, pilot and *Monitoring Times* subscriber, has suggested some others that are available. He has also included some excellent descriptions of what they are and what they are used for.

1. *Section Navigational Charts* -- These are regional navigational charts used by pilots and contain airport locations and descriptions, navigational beacons, federal airways, military training areas and pilot ground references. As Eric says, no pilot flies without them (or at least, shouldn't). There are also similar charts available for FIRS (Flight Information Regions) and control areas of foreign countries. These contain both VHF and HF listings.

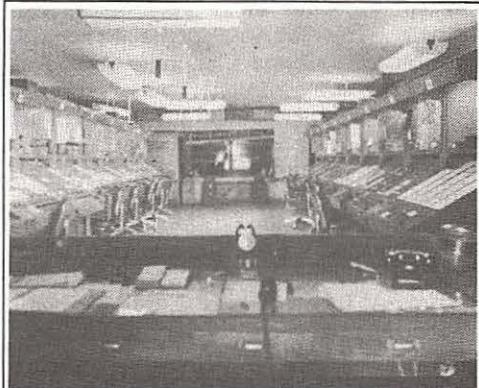
2. *Airport/Facility Directories* -- The directories are regional and are published about every two months. They are the most current and accurate publications of frequency data for airports, ARTCCs, and flight service stations.

3. *Airman's Informational Manual* -- (Also referred to in pilot's circles as "AIM".) This is a virtual encyclopedia for all aspects of aircraft operation in the US. Eric recommends this manual for anyone interested in understanding more about the communications they are monitoring.

4. *Aeronautical Chart User's Guide* -- This guide provides descriptions of all the publications available to pilots and the symbols used on the navigational charts.

The publications described above are available for purchase at Fixed Base Operations facilities (where general aviation and corporate pilots obtain fuel, parking, supplies and other amenities) located at your local airports, as well as from stores which specialize in the sales of maps and charts.

Flight Information Publications (also known in the aviation world as "FLIPS", or



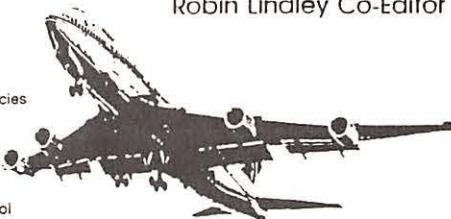
ARTCC facilities have changed a lot since the fifties (above) and today (below). But nothing compared to what's coming in the nineties!



OFFICIAL AERONAUTICAL Frequency Directory

- Air to Air Refueling
- Air Route Traffic Control
- Air-Ground Radiophone
- Airline Ground Support
- Advisory Station (Unicom)
- Approach Control
- Auto Terminal Info Service (ATIS)
- Clearance Delivery
- Common Traffic Advisory Frequencies
- Command Military Post
- Departure Control
- Enroute Stations
- Flight Service Stations
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Another item from Bill B. is that there is a new LDOC (Long Distance Operational Control) service air/ground station in London, England, identifying itself as NOVAIR. Frequencies and additional information will be furnished here at a later date.

✓ Stone the crows! Starting in the August column, we'll have some aero news and views from our new correspondent in Australia.

He writes an aero communications column for an Australian aviation magazine, and we've agreed to exchange information for our respective column readers. This is a new feature that you won't want to miss, so stay tuned to Plane Talk.

✓ Summer is a'coming and with it come air shows which can be found on almost any summer weekend from one end of the country to the other. We still don't know if we'll get to see one here in Indy or not, but there will be a plethora of them in the surrounding states and this writer plans to attend at least one of these.

We went to the last air show held here in 1988. It was 101 degrees that day, but the heat didn't deter any of us diehard airshow buffs equipped with sunshades, umbrellas, coolers and the like. The concessionaires did a landoffice business that day as it was a seller's market when it came to crushed ice, cold drinks, etc. Anyway, hot weather wouldn't ever keep us away from an air show --

especially if the Thunderbirds, Blue Angels, Golden Knights or Canadian Snowbirds are featured.

Speaking of the Snowbirds, Gary Holland (CA) asked what type of aircraft they use. Gary, our sources say that the Snowbirds fly CT-114 Tutors, which are jet trainers used by the Canadian forces as its basic pilot training aircraft.

✓ For the benefit of newcomers to our column, I'll extend the invitation which I make every year: Send the most unusual, funniest, frightening, etc. aero comms transmission you've ever monitored -- or maybe, situations you've otherwise encountered in aviation, to "Plane Talk." We welcome and encourage these contributions, along with photos, too. We'll protect your privacy -- if you prefer that your name not be used with your contribution, just tell us so.

That's it for this time. Coming up in Plane Talk, we'll have a visit to an ARTCC, a closeup look at American Trans Air, Air Traffic Control in other countries, more readers' contributions, and other interesting aeronautically-related subjects. And, of course, I'll see you at the convention in October!

Until then, 73 and out.

FLIP Charts) may also be ordered from the Defense Mapping Agency Aerospace Center, 3200 South Second Street, St. Louis, MO 63118-3399. You may request a listing of their publications from them, as well as the individual prices.

Readers' Corner

✓ Mark Murphy, a retired Air Traffic Controller and contributor to this column from its inception, has sent in a photo of what ARTCC facilities looked like back in the 1950s. The photo next to it shows a controller using the modern equipment found in the enroute centers of today. Air Traffic control has come a long way, but wait until you see what's coming up in the nineties. You'll read all about it here in *MT*.

✓ A very big "thank you" to the anonymous reader who sent a large package full of clippings concerning air traffic control and other aspects of the aviation world to us. There was no name or return address on the envelope, so we can't send a personal note; however, we can say our thanks here in the column and the clippings were very much appreciated.

✓ William Dickerman (Pennsylvania) tells us that the new Automated Flight Service Station at Williamsport Airport in Montoursville, Pennsylvania, will serve all of eastern Pennsylvania. The station expects to have 80 employees by mid-year. Eventually, the Automated Flight Service Station at Altoona, Pennsylvania, will handle all of western Pennsylvania. He also says that military aero comms buffs in the Philadelphia area and adjacent states who are seeking frequency lists and other info should contact TSP Monitoring Systems, 15 Chestnut Parkway, Wallingford, PA 19086-7233.

William didn't say what they charge for their frequency lists, but that company will probably give you all pertinent info if you send them an SASE along with a list of the freqs you want.

✓ Bill Battles (NH) would like to know if anyone has info as to what type of aircraft the FAA use for their Flight Check trips. If you hear a pilot identifying himself to air traffic control on your scanner as "Flight Check," this means that his aircraft is FAA-owned and he is testing navigational aids and other equipment in a particular area.

Bill mentioned that Pease AFB recently had a visit from "Swift 81" with a general on board and when the Tower asked for a/c type, they were told it was a C-21. Bill asked a friend of his who's retired from the Air Force what this type of aircraft was, translated into civilian terms, and believe it or not, was informed that a C-21 is the Air Force designation for a Learjet.

Cycle 22

It appears that Solar Cycle 22 has peaked and is beginning to decline. The solar flux reached a high of 327 in June of 1989 and has not been that high since. There is still a slight (although steadily declining) chance that sunspot numbers may rise in 1990.

Cycle 22 has produced a great deal of disturbance to the earth's magnetic field causing many periods of extremely poor propagation conditions. While this cycle has not been as profitable (from an amateur radio standpoint) as past cycles, it has nevertheless been quite interesting. If the cycle has indeed peaked, we will see declining propagation on the higher frequencies for the next several years.

Although the peak of the cycle may be past, we can still expect many periods of exceptional DX propagation. Don't give up on ten or six meters.

WWV transmits propagation reports at 18 minutes past the hour; listen to them to keep up to date on what is going on. Understanding the reports is relatively simple: Remember that high flux numbers (increasing sunspot numbers) means improved propagation. A second very useful bit of information transmitted by WWV is the K index, a rising K index means magnetic disturbances and poor propagation. It is possible to have high flux numbers and still not hear much DX if the K index is above 2 or 3.

If you own a computer, get a propagation program, and plug in the data from WWV to plot your own propagation charts.

Six Meters in Danger?

A proposal to utilize the six meter ham bands has been virtually ignored by the ham radio press. Sent to the FCC by radio station owner and amateur radio operator Lawrence J. Tighe (K2JTA), is the idea that the six meter amateur band be taken away from amateurs and used for low band FM broadcasting. Mr. Tighe believes the six meter band is not being used by the amateurs and should be put to use.

To date Mr. Tighe says that he received only about eight cards/letters objecting to his proposal. Consequently his feeling that amateurs are not interested in six meters has been reinforced. If you wish to comment to Mr. Tighe you can do so by addressing a letter to him c/o WRNJ Radio, P.O. Box 100, Hackettstown, NJ 07840.

This is another reason I would like to see communicators/Novices allowed on six meters. The band indeed does not have

adequate activity to stave off this type of attack very often.

DO IT!

There is seldom a week goes by that I do not hear from a new Novice/Tech who is afraid to operate Morse code (CW). The reason in every case is "I don't want to make a mistake!"

Good grief! Who the sam hill is perfect? Every CW op misspells words (usually intentionally), and procedure signals such as AR, K, KN don't really mean all that much. Just remember to ID with his call then your call (i.e. N3DPU de N3IK). Trust me, everyone will understand what you are talking about, and only a fool would insult, badger or complain about procedure. Often an old timer will explain how to use procedures, but seldom does anyone use correct procedure in a casual contact.

If someone is sending too fast, ask him to slow up. Ninety-nine percent of your QSO's will gladly slow down to your speed, and help you over the rough spots. As time goes on you will gain knowledge of the various Q signals and procedures, consequently improving your skill. Remember, the novice bands have been set aside so you can learn how to communicate; you won't be interfering with anyone!

Now get out there and DO IT!

June Contests

Contesting builds skill like nothing else; and June holds two of the most interesting contests of the year. Both are sponsored by the ARRL, 225 Main St, Newington CT 06111, and full details can be obtained from them.

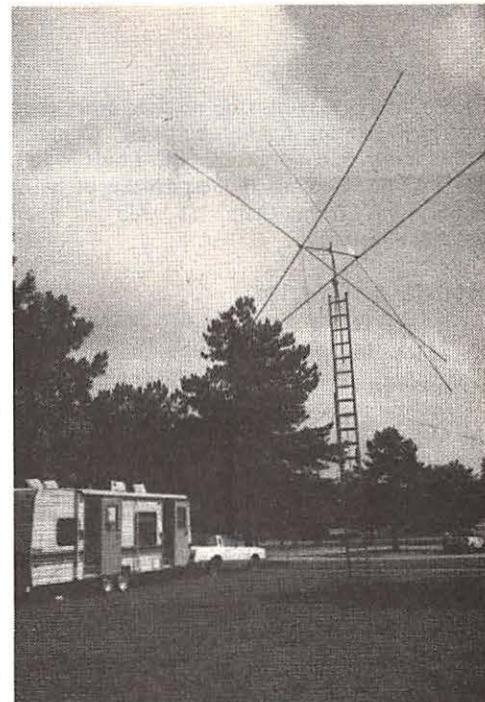
June 9 and 10 are the dates for the VHF QSO Party. This contest generates a lot of activity on normally dead bands when individuals and clubs erect elaborate VHF stations on mountain tops and rare locations through-out the USA and Canada.

This contest will put those elusive grid squares in your log book on the bands six meters and up.

Field Day

The last weekend of June is traditional FIELD DAY, for amateurs in North America.

The 23 and 24th of June 1990 will see



Carey NC ARC/Photo Harry Baughn

June 23rd & 24th will see hams hauling out all kinds of portable contraptions for the annual insanity known as FIELD DAY!

hams hauling out generators, batteries and portable antennas and taking to the hills for the annual insanity. While the stated objective is to work as many other stations in as many ARRL sections as possible, the true objective, as every ham knows, is to have a good time.

If Field day is nothing else it is memorable FUN. Even non-operators share in the excitement as loggers, cooks, gophers, spectators and moral supporters!

The only way to share in the fun is to join a club or group and go out and participate. This is one time where winning is secondary!

R3MIR/7

R3MIR/7 is a Soviet Club station active from the launch site of the MIR Cosmonauts. The station is located at Bajkonur Cosmodrome in UL7 land. The most active operator is Valery Agaebekov, UA6HZ. A QSO will bring a very interesting QSL card.

DX NEWS

K5VT is in Katmandu, Nepal. Due to loss of his triband beam he will be using dipoles if he is able to get on the air.

HS0SM is a new club station active from the Science Museum in Bangkok, Thailand.

The Natal DX Group will mount a DXpedition to Trinidad starting the first of

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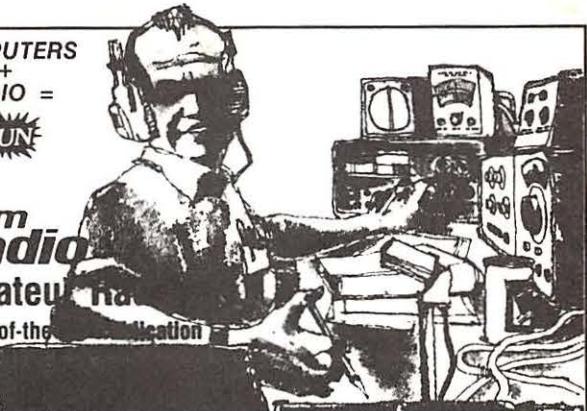
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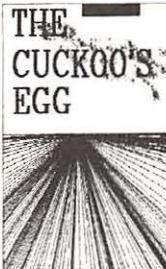
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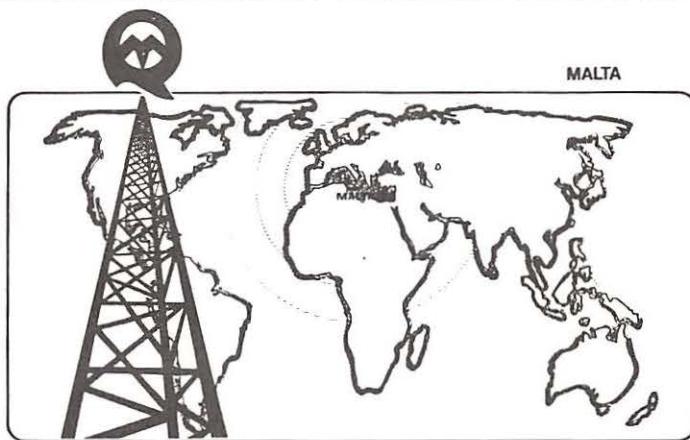
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Arabic: 18.00 to 19.00 hrs. UTC
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The broadcasts include news bulletins, sports, musical and cultural information mainly on the

Mediterranean area, but coverage is also given to European and World events of importance.

Comments for the improvement of the station would be appreciated and requests by our listeners are always welcome.

Write to:

Radio Mediterranean
P.O. Box 2,
VALLETTA - MALTA

Radio Mediterranean QSL, submitted by Michael Brummitt of Virginia.

BRAZIL

Radio Cancao Nova, 4.825 kHz. Full data QSL card, with illegible signature. Also received station stickers and souvenir Brazilian mint stamps. Received in 148 days for a Portuguese report and two IRCS. Station address: Fundacao Joao Paulo II, Cx. Postal 157, CEP 12 360 Cachoeira Paulista, Sao Paulo, Brazil. (Robert Landau, Secaucus, NJ)

Radio Nacional Bras, 11.745 kHz. Full data paper QSL and station sticker, without verification signer. Received in 105 days for an English report. Station address: P.O. Box 04-0340, 70 000, Brasilia DF, Brasil. (Robert Landau, Secaucus, NJ)

BURMA

Rangoon/Yangon Aeradio Air Traffic Control, 10.066 kHz USB. Full data prepared card, without verification signer. Received in 80 days for an English utility report, one U.S. dollar and return postage. Station address: Rangoon Aeradio, Telegraphs Dept., Mingaladon Airport, Rangoon/Yangon, Burma/Myanmar. (Rick Albright, Merced, CA)

COSTA RICA

Radio Impacto, 5.030 kHz. No data personal letter from Hector Requena C. Also received bumper sticker, pennant and souvenir postcard. Received in 175 days for a Spanish report and souvenir U.S. stamps. Station address: 497 San Pedro de Montes de Oca, 25 m Suroeste del Higueron, San Jose, Costa Rica. (Stephen Ponder, Shreveport, LA) Meadow, NY)

EAST GERMANY

Radio Berlin Int'l, 11.785 kHz. Full data QSL card, without verification signer. Received in 32 days for an English report. Station address: DDR Berlin 1160. (Robert Landau, Secaucus, NJ) (Jess Bunshaft, East Meadow, NY)

FRANCE

Radio France Int'l, 21.770 kHz. Full data scenery card, without verification signer. Received in 40 days for an English report. Station address: Boite Postal 9516, 75016 Paris, France. (Bob Hurley, Baltimore, MD) (Robert Landau, Secaucus, NJ)

JAPAN

Radio Japan, 11.755 kHz. No data scenery card, without verification signer. Also received station newsletter and broadcast schedule. Received in 45 days for an English report. Station address: Tokyo, 150 Japan. (Bob Hurley, Baltimore, MD) (Brian Bagwell, St. Louis, MO)

MALTA

Voice of the Mediterranean, 9.765 kHz. Full brown/white scenery card, without verification signer. Received in 119 days for an English report and one IRC. Station address: P.O. Box 143, Valletta, State of Malta. (Tim Johnson, Galesburg, IL) (Frank Hillton, Charleston, SC) (Darren White, New Augusta, MS)

NORWAY

Radio Norway Int'l, 21.710 kHz. Full data scenery QSL card, with illegible signature. Received in 72 days for an English report and two IRCS. Station address: N-0340 Oslo 3, Norway. (John Carson, Norman, OK) (Sam Wright, Biloxi, MS) (Brian Bagwell, St. Louis, MO)

SHIP TRAFFIC

M/V Gemini-P3LK2 (bulk carrier), 156.65 kHz. Full data prepared card. Received in 52 days for an English utility report and return postage. Ship address: c/o Navitrans Maritime, Inc., 13-11 Merarchias St., P.O. Box 8097, 185-35 Piraeus, Greece. (Hank Holbrook, Dunkirk, MD) (Cyprus ships QSLED # 7)

Morro Bay-NRWY (Coast Guard Ice Breaking Tug), 156.65 kHz. Full data prepared card. Received in 13 days for an English utility report and return postage. Ship address: c/o USCG Reserve Training Center, Yorktown, VA 23690. (Hank Holbrook, Dunkirk, MD)

M/S Nordic Prince-LAPJ3 (cruise ship), 12.398.2 kHz USB. Full data prepared QSL card with ship's stamp and Tour Book of the Royal Caribbean Cruise Line. Verification signer, Edgar Thomasson, Chief Radio Officer. Received in 25 days for an English utility report, mint stamps and souvenir postcard. Station address: c/o Royal Caribbean Cruise Line, 930 South American Way, Miami, FL 33132. (Larry Van

Horn, Gretna, LA)

Nosac Ranger-WRYG (car carrier), 156.65 kHz. Full data prepared QSL card. Received in 22 days for an English utility report and return postage. Ship address: c/o Pacific Gulf Marine, Inc., 3010 Gen. De Gaulle Dr., P.O. Box 6479, New Orleans, LA 70114. (Hank Holbrook, Dunkirk, MD)

M/S Royal Viking Star-C6CN2 (cruise ship) 8.746.8/8.222.9 kHz USB. Full data prepared QSL card with ship's stamp and color photo of ship. Verification signer, Svein Stroemsvaag, Chief Radio Officer. Received in 40 days for an English utility report, mint stamps and a souvenir postcard. Ship address: c/o Royal Viking Line, 95 Merrick Way, Coral Gables, FL 33134. (Larry Van Horn, Gretna, LA) *Note this is a new address from the previous one in San Francisco, CA.*

USS Biddle CG34. NNNONXW, 14.467 kHz USB. Full data QSL. Verification signer, Rick Balsteroff. Received in 23 days for an English utility report and mint stamps. Ship address: FPO New York, NY 09565-1157. (Fraser Bonnett, Kettering, OH)

USS Sylvania AFS-2. NNNOCZL, 14.470 kHz USB. Full data QSL, with illegible signature. Received in 12 days for an English utility report and mint stamps. Ship address: FPO New York, NY 09587-3031. (Fraser Bonnett, Kettering, OH)

SOUTH KOREA

Radio Korea, 15.575 kHz. Full data "Mask Dance Frenzy" QSL card, without verification signer. Received in 51 days for an English report. Station address: 46, Yoido-dong, Youngdungpo-ku, Seoul 150-790 Korea. (Darren White, New Augusta, MS) (John Carson, Norman, OK) (Robert Landau, Secaucus, NJ)

SRI LANKA

Colombo Aeradio Air Traffic Control, 10.066 kHz USB. Full data prepared form card, with station stamp and friendly letter. Verification signer, H.T. de Z. Amarasekara, Senior Air Traffic Controller. Received in 65 days for an English utility report, one U.S. dollar, and a souvenir postcard. Station address: Airport & Aviation Services (Sri Lanka) Ltd., Colombo Airport, Ratmalana, Sri Lanka. (Rick Albright, Merced, CA)

UNITED STATES

WTIC-1080 AM. Full data "antenna farm" card. Verification signer, Bob Doenes. Received in 9 days for an English AM report, a self-addressed envelope and a mint stamp. Station address: 1 Financial Plaza, Hartford, CT, 06103. (Harold Fodge, Midland, MI)

KRLD-1080 AM. Full data station logo card, without verification signer. Received in 71 days for an English AM report, a self-addressed envelope and a mint stamp. Station address: 7901 Carpenter Fwy., Dallas, TX 75247. (Harold Fodge, Midland, MI)

WRMR-850 AM. Full data QSL, without verification signer. Received in 7 days for an English AM report and a self-addressed envelope. Station address: One Radio Lane, Cleveland, OH 44114-4016. (Russ Hill, Oak Park, MI)

WHO-1040 AM. Full data QSL, without verification signer. Received in 10 days for an English AM report and a self-addressed envelope. Station address: 1801 Grand Avenue, Des Moines, IA 50265. (Russ Hill, Oak Park, MI)

VANUATU

Radio Vanuatu, 3.945 kHz. Full data "Slit Gong" (Tam Tam) card. Verifications signer, K.J. Page, Principal Engineer. Also received a friendly personal letter from the Engineer on station letterhead. Received in exactly two years to the day for two English follow-up letters, mint stamp and a self addressed envelope for the reply (used for the reply). Station address: P.O. Box 49, Port Vila, Rep. of Vanuatu. *Delighted to receive this QSL. My two years of persistence payed off-ed.*

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Espionage and RTTY

On January 23, 1968, a U.S. Naval spy ship called the Pueblo was captured by the North Koreans. One month later I graduated from the U.S. Army "South Eastern Signal School" in Augusta, Georgia; my "M.O.S." (Military Occupational Service) was 31E20 or "Field Radio Repairman."

Before long I was off to Korea to serve in the Signal Corp. For the next ten months, I maintained radio teletype sites. Both used encryption equipment and everywhere, signs warned that the enemy was listening.

I often wondered about that. Even our commanding officer told us not to worry because even if the enemy had a KW-7 (an RTTY encryption box that was connected between the teletype machine and tuning unit) they would also need a key list.

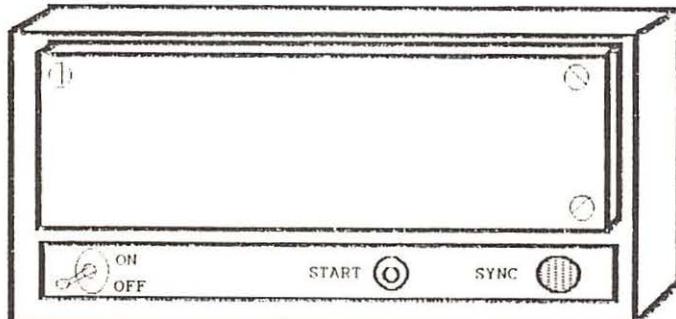
A key list is a card or a piece of paper that has a bunch of numbers which is used to set up the encryption unit. The unit



Posted signs were largely ignored; after all, they couldn't break our code -- or could they?

which was used in Korea was a grey box that was slightly smaller than the teletype and had a removable front panel. Once removed, it revealed a patch panel and a mass of numbered jumper wires that were inserted into numbered holes.

Each week the encryption unit had to be rewired and the keylist was like a wiring list. If two jumpers were out of place, the



The encryption unit that was used in the 50's and 60's probably looked like this computer generated drawing.

unit would malfunction by sending random characters to the TTY. We received a keylist each week by a courier which was sealed in an envelope marked "SECRET."

I didn't know it then but the enemy could very well have been listening to our RTTY. You see, we were never told that the North Koreans confiscated the crypto gear that was on board the Pueblo. But could they decode it?

Just a few months after the capture of the Pueblo, a man entered the Soviet Embassy, helping the Russians to rebuild the damaged crypto gear (the North Koreans released the equipment to the Russians in 1968), and launching a seventeen year career of treason and espionage. The man who was responsible for this treason was the notorious John Walker.

John Walker, his brother Arthur, his son Michael and on some occasions his wife, contributed to his efforts. He also, with the help of a friend named John Whitworth, provided both technical manuals and key lists to the Russians.

According to the book, "Merchants of Treason" by Thomas B. Allan and Norman Polmar, the key list that Walker sold allowed the Russians to copy any sensitive naval radio teletype communications. The Navy was having a problem that caused one ship, for example, to be unable to communicate with another because their keylists didn't match. So, in the late seventies they decided to adopt a single worldwide keylist. That, it turned out, was a big mistake.

Next month, I'll tell you *how* John Walker helped the Russians. But until then, NNN!



Getting the mobile communications shelters at Osan AFB ready for inspection.

Solar Powered TVRO and more ...

Some time ago, *Monitoring Times* subscriber Jim Hale of Kingston, Arkansas, wrote to ask a couple of questions about SCPC reception. In the letter he described his TVRO system with which I was intrigued.

Jim writes: "I live on top of a mountain in the Ozarks and can't receive cable TV. In fact, I haven't had electric service since 1979 and provide what power I need via solar cells -- 350 watts 17 VDC into used train batteries. I have a couple (of) inverters for AC stuff like a satellite TV/(actuator)/color 12 inch set."

Jim uses a Kenwood KSR-1000 which is a 950-1450 block downconversion system and has a Uniden 1000 for a spare. He also has an eight foot fiberglass dish. Jim wants to know how to use his system with a DX-400 shortwave receiver to receive SCPC.

"What connections do I make? I receive k1/k2/GSTAR and SBS -- why can't I get the Ku birds from Canada?" Finally, "...any idea how much power is used by a VCII?"

Well, Jim, first my hearty congratulations on your solar powered TVRO set-up: Good work. Now for some answers.

SSB/SCPC GOES FM/SCPS

Some years ago radio network programmers used single sideband/single channel per carrier (SSB/SCPC) technology to transmit their programming to affiliates. For obvious reasons of fidelity they all switched to Frequency Modulation/Single Channel Per Carrier (FM/SCPC).

To tune FM/SCPS you'll need an SCPC receiver such as the Heil SC-1 (see *MT* Oct. '89) which tunes the 950-1450 MHz frequencies of your block downconverter. Or you can tune the 70 MHz IF loop on the back of your satellite receiver using a TV band audio radio (such as the Radio Shack Portavision-40). The latter allows one to glimpse the world of SCPC, the former allows one to enjoy it.

As to the Canadian birds, I'd say your location is simply too far south for enough Ku rays to accumulate in your reflector and break the threshold of your receiver. It would be interesting to see how you would do with a larger dish. A ham in south central Minnesota once checked into the TVRO net and reported excellent Ku pictures from Europe via his 16 foot Paraclipse.

As to the power consumption of a stand-alone VC II: it is 40 watts. However, buying an IRD (Integrated Receiver Decoder) would allow you to have a VC II without such increase in your overall power consumption.

TVRO Across the Pond

A special thanks to Keith Bradbury of Manchester in the UK. Keith sent an extensive list of Ku band activity gleaned from his own observations and lists in satellite guides. He is using the "...basic fixed system for Astra, STR-20, from Grundig, priced \$800..."

According to the two page single spaced printout of Ku satellite activities there is a wealth of watching for European dish-owners. I wonder what FM audio subcarriers are being heard and what SCPC services are found as well.

Computer Quandry

Myron Calhoun, W0PBV of Manhattan, Kansas, works in the computer science department at Kansas State University. He writes: "...Several years ago AT&T gave us several AT&T Sceptre terminals which connect to an ordinary TV and have a detached (somewhat miniaturized) QWERTY keyboard and a built-in 1200 baud MODEM.

"The manual mentions the Sceptre may also be used as video-text terminals. Unfortunately, no instructions are given on how this can be done, and when AT&T gave them to us, they didn't include any additional information..."

Well, Myron, I'm no help. But maybe another reader is. Let's find out.

TVRO on the ICOM R-7000

James Lee Tabor of Farwell, Texas, writes that he bought an ICOM R-7000 last December with which he plans to do a number of things including getting the amateur TV option for the purpose of tuning his Ku LNB which, he reasons, "should provide better frequency control than the channelized format of my satellite receiver..."

In addition, James plans to use the power supply from a Radio Shack in-line amplifier to power the LNB. Finally, he would like a schematic for a circuit to provide the pulse necessary to control the Polarotor.

First, let's back up to the beginning. Bitter personal experience causes me to warn TVRO experimenters to pay close attention

Bitter personal experience teaches experimenters to pay close attention to cable connections.

to what cables are attached to what terminals when it comes to hooking up expensive shortwave gear to your TVRO system.

When you split the 950-1450 MHz block down signal with the intention of connecting one leg of the split to an HF receiver, make certain that the splitter has a DC block on the leg that is to feed the radio. This will prevent the DC which powers the LNB at the dish via the coax cable, down which the signal comes, from getting into the radio and "smoking" it. Not a very pretty sight.

I'm not at all certain that using the ATV option to tune Ku will give you a better picture than your satellite receiver. I have to say that I would confine the R-7000 to SCPC work.

Secondly, I believe the RS in-line amplifier is the wrong kind of amplifier for what you're trying to do. The in-line amp is really intended to just boost weak TV signals on long runs of coax. If you're intent on using the R-7000 as a Ku only stand-alone system, you'll need a bona fide LNB power supply which you may buy for around \$45 from Heil Sound, Ltd. (Heil Drive, Marissa, IL 62257, or call 618-295-3000).

Finally, I don't have a schematic for a circuit to provide the pulse for the polarotor. However, you'll be happy to know that a stand-alone control for a Polarotor can be had for \$25 from the Sky Store. Write: United Satellite Systems, St. Hilaire, MN 56754, or call 218-681-5616 (MN and Technical Assistance) or 800-328-7733 (U.S. orders only).

Zenith Teletext Revisited

Kris Field of Ambler, Pennsylvania, is in the market for a new TV set and, since he's on a cable system, thought he'd look for a Zenith set with the built-in Wold Standard Teletext decoder. He asks, "Are these TVs still available?"

Yes, Kris, they are in virtually every Zenith TV dealer's showroom. Look for Zenith System 3 model TVs all of which have the WST decoder built-in and accessible via the infrared remote control (IR/RC) which is standard with these sets.

Want something to drool over? How about Model #ZB3195H which is a 31 inch screen, stereo sound by Bose, WST built-in, and features Picture-In-Picture (PIP). A mere \$2,700 list and it's yours.

However, I did some shopping locally and found a Zenith 27 inch screen with WST which has a list price of \$999 discounted to \$599. When you consider that just a few years ago old Keyfax WST decoders were selling in excess of \$300 each that would mean you get the WST decoder and for another \$300 get a 27 inch Zenith set. Not a bad deal.

These sets with the built-in WST decoder range from 20 inch to 8 foot projection models. Operating these sets is very simple. Tune the TV to the cable channel that carries TBS Superstation. Now set the switch on the top of the IR/RC from TV to Teletext. Within seconds the ELECTRA menu will appear and you may use the appropriate buttons on the IR/RC to access the many WST features. It couldn't be easier.

Have an urge to do-it-yourself? Try the Heathkit GR-2701-P which is essentially a Zenith 27 inch TV with built-in WST decoder which you put together for \$800. Call 800-252-0570 or write Heathkit P.O. Box 8589, Benton Harbor, MI 49022-8589. Call them anyway and order their free catalog. It's full of lots of great projects.

More R-7000s

On another topic Kris says, "I recently purchased an ICOM R-7000, own a Grove Scanner beam and an Infotech M-7000. Do I need a satellite dish and a lot of other expensive equipment or can I get started with what I have?"

Kris, you'll be happy to know you already have the most expensive part of a great SCPC receive system. It happens that Heil Sound, Ltd. can provide all the rest for \$450. You get a five foot ground mount ring dish, a 55 degree LNB, a feedhorn/Polarotor, power supply for the LNB and 100 feet of cable with connectors.

After installation, just plug it into your ICOM 7000 and listen to the many audio network programs on SCPC. For an even better system change the five foot ground mount ring dish to a six foot or eight foot (or

still better ten foot) pole mounted dish, put a good actuator with controller on it and you can scan the entire Clarke Belt looking for even more SCPC signals. Heil has these products for you as well.

47th Street Photo Revisited

Rene Mathijssen of Edmonton, Alberta, Canada, writes, "In the March 1990 issue, you mentioned a 21 inch multi-system monitor from 47th Street Photo. However, I cannot access the 800 number from Canada. Can you give me their full mailing address?"

Oops, sorry, Rene. Here's the missing information: 47th Street Photo. Mail orders: 36 East Nineteenth Street, New York, NY 10003. Phone 212-608-6934. Toll free (U.S. only) 800-221-7774.

Rene also writes, "My interest not only goes out to all the different communications systems on shortwave, but I am also heavily interested in what all the satellites up there have to offer. I have been involved with weather satellites since 1969 and I have been selling and installing domestic C band satellite systems since 1978. I have installed receive-only stations as far away as China."

He continues, "...I am just getting started with amateur radio again, after being away from the ham radio hobby for the last ten years (Ex PA0YS). I used to do weather satellite pictures, RTTY and amateur SSTV back in Holland between 1965 and 1975."

Rene is working on building what I'd call a dream QTH: "...I have purchased three acres of land in a quiet location...my plan is to set up three dishes for C/Ku band TV, C/Ku SCPC/digital info and the last one for L/S band...plus about three towers for the VLF, HF, VHF and UHF antennas. That should do it..." Indeed!

Hope to hear more from you, Rene, and all the others out there who wish to share their multi-faceted interests in the exciting hobby of monitoring. Many thanks to all *MT* readers who take the time to write about their TVRO experiences or questions. It's always a pleasure to hear from you.

TRANSPONDER NOTES

For reasons known only to insiders, it happens that channels periodically hop transponders. This almost always results in a lot of confusion and it's often quite a while until things are adjusted. It's what makes

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almost all transponder guides frequently out of date.

A few cases in point: Telemundo Network (formerly W5,18) is now S2,9, SCOLA (formerly S2,19) is now S2,20, NHK (formerly G2,11) is now W4,18, Tuxedo (formerly G2,10) is now G2,4 and the BBC (formerly W5,15) went to W5,16 and then disappeared.

And what about the fabled Caribbean Super Station (CSS)? It has been seen regularly weekdays on W5,22.

The SBCA's Information Channel has had a change as well. While still using the TBS Superstation barker channel (G1,18 6.8 MHz audio) for taped news and consumer information, the group is also using the 6.2 MHz audio of W5,17 (RFD-TV) for its live dealer oriented programming. The schedule is Tuesday, Wednesday and Thursday from 1-2:30 PM ET.

Also moving was the SKY STORE which is now found on W4,11 every other Tuesday from 9:30-11:30 PM ET.

C-SAT has also been changing its programming schedule but retains its unique irreverence combined with retransmissions of BBC news program.

Magic in the Attic

Hidden away in a tiny attic is America's most unusual and ambitious radio station. It represents a lifetime of work by Marc Sophos, an aspiring law student who loves to go on the air. For the past eight years the sounds of WDFH have been playing from the side of his bed to 10,000 surrounding homes via cable television. Using unconventional strategies and lots of ingenuity, creativity and determination, Marc has become a broadcaster like no other.

At first glance, the Sophos home on Brookside Lane might appear ordinary. Ring the doorbell and you're greeted by a friendly



It could be just another house of Brookside Lane but it's a radio station as well!

mutt with a big black nose. Marc's mother Marilyn sits teaching piano to a young lady in the living room, while his father Anthony relaxes and watches TV. Then follow Marc up a tall flight of stairs as he leads you into his wonderland. Suddenly you are surrounded by tape decks, audio consoles, cart machines, microphones and hundreds of CDs. Welcome to WDFH, Dobbs Ferry, New York.

As the door opens, your movements develop cat-like cautiousness. Surrounded by sloping attic walls and beams, three tiny rooms house a myriad of broadcasting gear and Marc's bed. The words "watch your head" become very important. Every inch is accounted for in the two identical studios Sophos has created for his volunteer staff.

When no one is available to spin the records, WDFH can operate on its own. Using several reel-to-reel tape recorders, an old Commodore 64 computer and a home-brew events controller, Marc has designed an automatic playback system that can run the station for 24 hours unmanned. You might think the attic is host to a family of ghosts as the machines stop and start around you.

Getting WDFH on the air required lots of creativity too. Dobbs Ferry is only about fifteen miles from the center of New York City and finding an unused broadcast frequency in this area is next to impossible. After years of trying, Marc finally discovered a way to bring WDFH to the public. In 1982 cable television

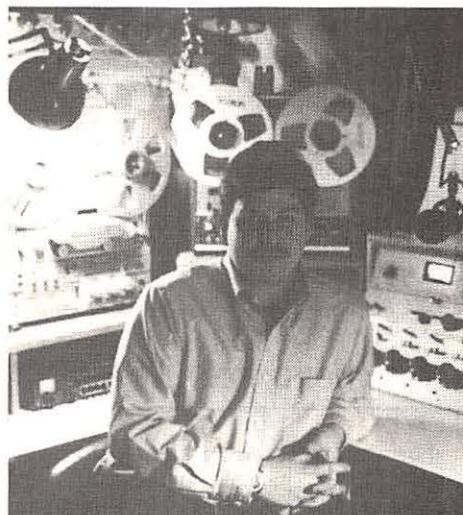
came to town, and channels 35 and 36 were allocated for local community use. Since the channels were only programmed for an hour or two a couple of days a week, they were almost always silent.

Sophos asked UA-Columbia Cablevision for permission to use the two channels as a vehicle to broadcast his station and they loved the idea. A high quality telephone line was installed from Marc's attic to the system providing musical accompaniment behind the computer generated video announcements. WDFH was born and cable subscribers began to turn on their televisions to listen to their local radio station. Sophos also broadcasts his station on 91.9 FM using a short range transmitter that requires no license under Part 15 of FCC regulations.

WDFH is not only a radio station, it's a broadcasting school, too. Sophos invests time and money into the sound of the station as well as the equipment. For his volunteer staff WDFH has been a wonderful opportunity to learn the broadcast trade. Marc welcomes newcomers to the business and serves as their coach until they meet his high standards of air quality. Several staffers have advanced to high positions in the college and commercial broadcast world.

Along with his talents in broadcast engineering and production, Sophos is an accomplished scholar of communications law at Pace University. His dissertation "The Demise of the Public Interest Standard" was recently published by the Pace Law Review.

Broadcasters should not forget to serve their audience in Marc's eyes. "I was driving through Wyoming and tuned into a little mom and pop radio station, and they announced things like Daisy Mae's gall bladder operation.



The production studio is where new staffers learn the ropes of radio in Marc's attic.



As silly as it sounds, that was radio making a difference for people. This is what radio can do and can be. What are big stations doing for people locally?"

"Broadcasters are people and they have First Amendment rights just like anyone, but it holds a lot of responsibility. Broadcasters refer to frequencies as their own and not in the public's benefit. This is a serious issue." Marc's convictions toward public service reflect in the programming of WDFH. "The key is to provide a service that is valuable. We play uncluttered music that is easy to listen to; stuff you don't hear anywhere else." The Sophos sound includes progressive rock and new music with some classic rock thrown in. "We respect the artistic intent of the music. We don't talk over it and we announce everything (all the song's artists and titles)."

Marc wants to eventually become an FM license holder and maintain his station's noncommercial status. "One of the things I've wanted to do on 'DFH, if it ever became an over-the-air station, is an opinion program where people can say what they want to say. If others want to reply, we'll give them equal time." Today's phone-in shows are heavily screened and don't truly represent what the public has to say, in Marc's eyes.

Although occasional donations and corporate and federal grants help fund WDFH, most of the finances are supported by Marc's paycheck. "Money is out there if you know where to find it but you have to make a fairly big financial commitment to a station like this."

"I've also had good luck at getting used equipment cheaply." The mainstay of his attic studios are two RCA BC-7A consoles. The first one ever made, serial number 001, is on the air daily and still works perfectly. Sophos completely modified and rebuilt it for stereo operation. A third BC-7A hangs from the ceiling as a spare.

So do people actually turn on their televisions to listen? "I have no idea. People wave at me while I'm driving because of my WDFH license plates sometimes, and others comment that they've been listening for years. It's a matter of faith. There are people out there. You never know."

Bits and Pieces

✓ A solemn note concerning WDFH. A good friend of Marc Sophos, and a primary figure in the establishment of the station, passed on in March. Eric Didul had worked as a WDFH volunteer since 1985. While attending William and Mary College, Eric rapidly

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International Bandscan

Interested in Radio Caroline, the off-shore broadcaster in the North Sea? Weekly recorded news of the ship can be heard on The Caroline Movement Infoline by calling 011-44-088-425-8641. It's updated every Wednesday evening.

In Belgium, the Flemish government has announced the licensing of 378 "nonpublic" commercial radio stations to compete with the BRT services, who will begin to carry advertising as well. The BRT television service will become the nation's only noncommercial broadcaster.

South Africa's SABC has closed their domestic AM transmitters on 990, 864, 729, and 648 kHz now that they have been replaced by FM outlets. A new 100 kW station is being built in Ciskei that will operate on 639 kHz.

Spain's Radio Euskadi is currently being heard on 1161, 819, 756 and 540 kHz, with high powered transmitters on 1197 and 1071 kHz.

Credits

Before we go, remember that your comments and questions are important to us. Write to: American Bandscan, *Monitoring Times*, P.O. Box 98, Brasstown, NC 28902. Also remember to join in the fun on Columbus Day weekend when *Monitoring Times* will present its first annual convention in Knoxville, Tennessee. American Bandscan will be on the air with a carrier-current station in the hotel on 530 kHz.

Thanks to our contributors this month: *Broadcasting* and *Radio World* magazines, the *M Street Journal*, the British DX Club, and readers J. Bryan Forbes, Cathy Turner, David Doan, Ken Hydeman, Alan Masyla, Robert Gonter, Tommy Tomlins, Greg Boyington and Malcolm Kaufman. Until next month, have fun and happy trails.

became the station manager of the college's WCWM due to his training in Marc's attic. "He was very creative and important to our station, and a lot of fun to have around. He was a nut," Marc said affectionately. We join Marc and the staff of WDFH in mourning their loss.

✓ The FCC has frozen the AM broadcast band! The Commission will no longer accept applications for new stations or changes to existing facilities until they release new regulations concerning these matters. Procedures for stations wanting to apply for operation in the new 1610 to 1700 kHz expansion band are expected to be a part of the updated documents. Until then, your AM radio will stay just the way it is.

✓ As the baby boomers grow older, radio is adapting to their tastes. The hottest format on the dials is classic rock catering to 25 to 54 year olds. Twice as many stations are playing the tunes of the 60s, 70s and 80s than a year ago, and the trend shows no signs of stopping. America's favorite music on the radio continues to be Country. About 2,500 stations play that all-American sound; that's one out of every four.

Mailbag

✓ Cathy Turner of Yonkers, New York, sent us a very telling classified from a recent copy of *Yankee* magazine. "Will swap 1000 watt AM radio station in small central New York City for mountain/waterview real estate in Berkshires, Vermont, or New Hampshire." In a similar vein, WKZX in Presque Isle, Maine, a 5,000 watt AM station on 950 kHz, recently pulled the plug forever because the owners could not make the operation profitable or find a buyer for the facility. Large antenna towers became scrap metal and the property was cleared for a new housing project.

✓ As the old falls, the new rises. Towering over Portland, Oregon, is a new 600 footer atop a 1,000 foot hill in Healy Heights. Constructed of three huge steel legs filled with high strength concrete, it is designed to survive earthquakes and hurricane strength winds. After eight months of building, a thirteen ton FM antenna will be mounted atop the tower serving six broadcasters with the most penetrating signals in the northwest. Greg Boyington sent in this tall tale.

✓ If you own a Sony '2010 receiver, you'll want to read a book by one of our readers. "Get the Best From Your Sony ICF-200ID/2010" includes all aspects of its operation, modification, and repair. Loaded with low cost improvements, it might make a world of difference in your enjoyment of this world band radio. Contact Steve Whitt at 21 Cauldwell Avenue, Ipswich, IP4 4EB, England, for details.

New Station Grants

Coming to a radio near you are these stations recently given the okay by the FCC: Beebe, AR 101.5; Ione, CA 88.3; North Highlands, CA 89.3; Sacramento, CA 88.9 and 89.7; San Luis Obispo, CA 97.1; Sutter Creek, CA 101.7; Panama City, CA 105.1; Dwight, IL 98.9; Woodlawn, IL 106.9; Winterset, IA 95.7; Radcliff, KY 103.5; Alexandria, LA 93.9; Huntsville, MO 92.5; Albuquerque, NM 101.3; Delhi, NY 100.3; Warrensburg, NY 100.5; Kinston, NC 102.9; Langdon, ND 95.7; Sarles, MD 105.9; Moore, OK 88.1; Watertown, SD 92.9; Rogersville, TN 106.5; Huntsville, TX 103.5 and Los Ybanez, TX 107.9. Courtesy of the *M Street Journal*.

For Sale

If you are looking to buy a station, maybe you'll discover it here. With 1000 watts during the day you could be broadcasting on WDDT, 900 kHz, in Greenville, Mississippi, soon. It has been repossessed from a former buyer. An experienced station owner could have this station soon, if they promise to put it back on the air. The current owner will finance the station for you with no down payment, with a first payment on the principal due in two years. Call John Gibson at 601-334-4825.

On sunny Florida's east coast is a full-time AM station with 5,000 watts daytime and 1,000 watts at night. The facility includes a nice piece of real estate and is in the third fastest growing metro area in the country. Financing is available on the \$625,000 purchase price. Call Dan Wallace at 407-461-2414.

An AM/FM combo is ready in southeastern North Carolina. With

TV-MARTI, so long-awaited, has been in operation for several weeks now. The station's route from South Florida to Havana is a rather unique one. Transmissions originate in the Miami area and are sent from there to a satellite. The satellite in turn relays the signal to a site on Cudjoe Key in the Florida Keys. From there it is relayed to an aerostat balloon which floats at an altitude of 10,000 feet. The balloon is then used to beam the signal into Havana. Channel 13, which ironically had been reserved for Cuban use, is being used for these telecasts.

Cuba has been jamming the signal, so how extensive an audience TV-Marti has is difficult to estimate at this point. We also understand that transmissions have not been made every day. One high-ranking government source informed us that the use of the aerostat balloon makes broadcasting difficult to impossible under less than ideal weather conditions. Supposedly alternative transmission methods are already being explored.

The impact of TV-Marti on Castro is also hard to estimate. Several days before programming began, Cuba fired up its high-power mediumwave radio transmitters. Interference to stations in South Florida was extensive, and the Cuban broadcast was easily heard in the Northeastern United States. Supposedly two of these transmitters are capable of up to 500 kW, while a third might be able to put out a million watts at peak capacity.

Pennsylvania's John Demmitt heard the Cuban broadcast on 1040 and 1100. He remarks it included a speech by Castro in which he gave his impressions of TV-Marti. John also noted there was a jammer on 830, a frequency Cuba has often used in the past. Could this be a warning if TV-Marti goes to hard-line news and commentaries?

One casualty of TV-Marti is the former director of Radio Marti, Ernesto Betancourt. Betancourt was at one time a fellow revolutionary with Castro. In exile, Betancourt became dedicated to the cause of Radio Marti. He firmly insisted the station is not a

clandestine operation, but simply a source of news and information for the people of Cuba. He claimed that under the government guidelines established for Radio Marti, it could not be involved in Cuban-exile politics or attempts to overthrow the Castro government.

Betancourt was not transferred because of his work at Radio Marti, but rather for his criticism of the projected TV-Marti.

Apparently others have also questioned the ultimate purpose of the new station. With the entire Communist world in shambles, there is increasing doubt about the future of the Castro regime. It seems some influential persons have come to the conclusion that TV-Marti might be used by those who would like to emerge as the new leaders of a post-Castro Cuba.

"Outer Limits" Around the World: What is as good as hearing the legendary Radio Caroline? For Paul Kay of England's pirate Wrekin Radio, it is watching it. Paul sent us a postcard from Amsterdam noting that Caroline's home ship, the Ross Revenge, was easily in sight during the ferry crossing from England to the Netherlands.

From the Netherlands, Ary Boender writes that Caroline is going strong twenty-four hours a day on 558. However, those mysterious transmissions on 6215, whatever their origin, have now disappeared. It is unlikely they were from the Ross Revenge in any case. The ship M.V. Communicator, the former home of offshore commercial pirate Laser, is now back in Lisbon, Portugal, after its American backers disappeared. Ary reports several other planned floating pirates appear to be in similar states of limbo.

A special hello also goes out to two other foreign readers of "The Outer Limits." Thanks to Enrique Ramirez of Peru and England's Brian Jones for writing.

Meanwhile closer to home: Michigan's Bill Lauterbach came across a "pirate roundtable" on 7416 starting at 2003 and not concluding until 2115. By that time Bill had logged seven stations. His catches included Radio New England, WXZR, WBNY Bunny Rabbit Radio, Rockabilly Radio, Radio Rhode Island, WRI and WSWL.

Not bad for a day's work, Bill. And not to be outdone, our regular contributor, Fraser Bonnett of Ohio, also bagged most of the same participants in the "roundtable." Fraser has also had some good hunting on 7400, including Radio Mexico, WTN and WBST.

Out in Iowa Chuck Taylor came across Free Radio WHO on 7461 at 2000 UTC, with a history of pirate stations. Since the

licensed WHO has been in Des Moines since the early days of radio, I wonder if this one might be Iowa based, Chuck.

Mansbach strikes again: Well, as we said before, Judah Mansbach is good at what he does, namely closing down pirates. According to New York's Herb Gesell, Joe Cieslewicz and Larry Blass Long, Island FM pirate WQNR is one of his latest victims. The operator had a record collection dating back to his childhood and kept elaborate station records, but in the end his fate was the same as that of Mansbach's other catches.

Larry, who is in commercial radio and has met Mansbach, adds that various trade journals indicate that the FCC not only plans to continue going after pirates but also the companies who make the equipment available to the pirates in the first place.

But what about a station whose operator wants to get arrested and cannot? Believe it or not there is one. Father Frank Westhoff sent us a report from the *Illinois Times* on FM 107.1 WTRA in Springfield and its creator Dewayne Readus. Readus, who is legally blind, broadcasts to a black audience in a federal housing project. He has only one watt of power but lots of volunteers.

What has attracted attention to WTRA is not its music or watt power but the fact that Readus does not hesitate to go after the local power structure in his news and commentary. The FCC has told him to cease and desist; however, Readus has ignored their warning. The Springfield Police say that they cannot arrest him since they do not have jurisdiction, and an appeal for arrest at the city's Federal Building also failed. So Readus remains a free man, without his day in court and still on the air.

He has received letters of support from several prominent Americans and has to be considered one of the most unusual and controversial broadcasters around.

Then there are pirates who deserve to get arrested for things other than broadcasting. John Deysher sends along an article from the Binghamton, New York, *Press & Sun Bulletin*. It appears that the persons who stole equipment from local station WCDO used it to put their own station on 95.9 MHz. The alleged burglars were later caught, but the equipment was destroyed, and WCDO was off the air for six or seven hours as a result of the theft.

Numbers puzzle: We received an intriguing letter recently from Mr. "A.N. Onymous," who lives in Ohio. He is curious about some intriguing receptions he encountered. Does he have something here or not? Perhaps some of our readers wish to take on this combination technical and



*This verifies your reception
of Pirate Radio U.K. on the
frequency of 15063 kHz. We
were being relayed by E.C.P.R.
Mr. Braxton Pickle*

A much-valued QSL from
Pirate Radio UK

numbers puzzle. Mr. Onymous and I would like to know what you think. He writes:

"I heard groups of five tones 3/2 on 6185 kHz. The tones lasted four seconds followed by 34 seconds of silence. I turned on the M7000 and the data light came on. I tried all the modes with no results. When I turned on the data bit mode the screen was covered with binary numbers. The data was scrolling up so fast the whole screen was smeared. The data was not produced during the tone sequence, but in the spaces when no modulation could be heard. The signal was S9+30 here at 0430-0510.

"A few days later I tried again, but no tones. When I turned on data bit I got five binary numbers followed by a single arabic number. The screen showed ASYNC 72 B 202 N on the command line. I am using an R71 and a Datong AD 270. Am I actually intercepting something or is the machine generating the numbers from the background noise?" Solutions, anyone? Jack Albert, what do you think?

Just to add a bit of intrigue and controversy, Mr. Onymous ends by noting that while passing through another Ohio city he heard a man and woman reading English numbers in three and four-digit groups on 157.745 MHz at 1600 UTC. There was no introduction or group count. For reasons they have never cared to make clear, some folks get quite paranoid at the mere mention of numbers transmissions on such frequencies.

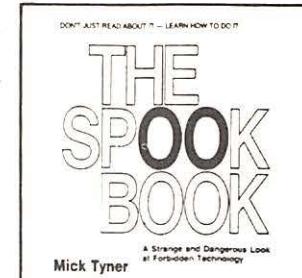
And a few final thoughts: California's Skip Harwood writes that his previously reported logging of Radio Camelot International on 7416 was indeed a relay by Zodiac Radio. Radio Camelot announces an address in Hastings, New Zealand. It appears that Zodiac also serves as a relay for several domestic pirates. Some stations actively seek such relays because they increase their potential audience. A few may have no transmitting facilities of their own.

Along similar lines, Fraser Bonnett and this writer recently received much appreciated QSLs from Pirate Radio UK. Pirate Radio UK is relayed by East Coast Pirate Radio. Fraser also reports a QSL from KNBS.

Hal Butcher of New York got a prized QSL for a genuine trans-Atlantic Europirate broadcast. This was for logging of Pirate Freaks Broadcasting Service on 15050 at 0608. Information received from the station claims they broadcast from Germany with a mere 10 watts. Congrats, Harold!

Finally, faithful reporter Mike Fern checks in with another excellent clandestine catch. He found the Iranian Flag of Freedom station on 9045 at 0330. Mike also caught what may be a relatively new West Coast pirate. This is radio Free Yesteryear, which also identifies as WMEX, on 6850 at 0710.

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DATE (UTC): 9-4-88
TIME (UTC): 0422-0450
FREQUENCY: 7415 kHz

QSL# TWENTY
TO: Steven J. Rogovich

THANK YOU FOR TAKING THE TROUBLE AND EXPENSE TO REPORT!

NUTS HELL, WE'RE BEARS!

A Radio Garbanzo QSL from the collection of Steve Rogovich.

Thanks again for all your hard work and excellent contributions. We will be back next month with more. Here is just a final thought. With all the unbelievable changes in Eastern Europe, those Soviet bloc QSLs we used to take for granted, because they were so

easy to obtain, are now collectors' items. Today's stations are tomorrow's history. Catch them, no matter what they are, while you can.



The Changing World

One way to bring about change is to publish news of beacons with their frequencies and IDs. The ink isn't even dry on the pages when the changes begin. One DXer reported hearing YFH/266 and expected that the FH stood for Fort Hope. The original official listing had YDD as the ID for this location. Now this has been confirmed as another case where the planned and the actual ID are different.

Alma PQ was supposed to change with YTF as the new ID, replacing H8. Now it appears that the H8 ID will remain, at least for some time to come.

How does this happen? The first clues to a proposed change are usually found in various government reports. All of these beacons require government approval, so this information is published when the approval is given. Situations may change after publication and parts of the information may be changed as a result.

H8 indicates a beacon for a private airport, while YTF would be used for an airport belonging to a governmental unit such as a municipality, a regional airport authority, etc. This indicates that the Alma airport is currently remaining as a private installation.

The Yuma beacon seems to have switched back to the earlier ID of OEG. The reason for the change is not known, but they are definitely using OEG instead of the new ID of LGF. Sometimes a new ID causes some confusion with another beacon, possibly even one that is some distance away. Whatever the reason, mark your records to show Yuma is back to OEG.

Apparently the function of the Waterloo beacon on 335 has changed. The old KF beacon was heard briefly as YKF about a year ago, apparently testing at that time. After a period of silence, it comes back as K -- apparently a runway marker.

It was reported some time ago that GND/362 (Port Salines, Grenada) was changing its ID to PSA. Again, a case where the old ID is remaining in operation. Keeping up with beacons is not a now and then job. I'll try to keep you as up to date as I can.

For those of you who have the 1990 *Beacon Guide*, PDR is listed on the future

beacons page without a frequency. It has now begun operating on 233, replacing the previous ID of OWX.

When a change is planned, it is not certain whether the new ID will be on the old frequency or include a switch of frequency as well. The only absolute requirement is that if a beacon location is moved physically, even a relatively short distance, the ID *must* be changed.

This is done to prevent navigational errors if someone is using an old source that shows the old beacon. By changing the ID, there can be no confusion about the location. However, a change in ID does not necessarily require a change in location.

In recent months I have made several comments about the three sequenced California marine beacons on 302 -- L from Point Loma, O from Point Arguello and V from Point Vicente. Both L and V have been reported recently; O has not.

Now the latest bulletin from the Coast Guard for this district lists Point Loma and Point Vicente as sequenced beacons but never mentions Point Arguello at all in this connection. It appears that Point Arguello is at least definitely out of service at this time and may not be back in the future.

There is a general pattern of eliminating sequenced beacons by moving some to other frequencies and making them continuous marine beacons instead of sharing both time and frequency with other marine beacons. One of the sequenced group may remain on the original frequency as a continuous beacon but the other sequenced beacons are shut down and decommissioned.

It has been confirmed (via QSL card) that U/308 on Partridge Island, New Brunswick, is now operating as a continuous marine beacon instead of sequenced. There has not been any published official notice of that or other changes. However, it would seem likely that some other changes could also be occurring. If you note anything different on Canadian marine beacon cycles, please report it.

The Coast Guard also reports that it is reducing the power on several continuous marine beacons along the southeast coast.

What this means is that beacons like Z/313 at Cape Canaveral, Florida, and J/296 at Jupiter Inlet, Florida, will be a little harder to pick up when you are listening.

Marine beacons are being geared more and more for pleasure boaters. The reduced power will still be sufficient for pleasure boats to pick up signals as they proceed along the coast line, while (I assume) lowering operating costs.

This month's loggings come from George Karayannopoulos of Navesink, New Jersey. He has a European portable, so the longwave coverage is geared for broadcast rather than beacons. The frequency range is only 140 to 260 kHz. But, as he proves, there are still some beacons to be found in that range (or just beyond).

194	TUK	Nantucket MA
198	DIW	Dixon NC
216	CLB	Wilmington (Carolina Beach) NC
233	PPK	Palisades (LaGuardia) NJ
241	EW	Newark (Int'l) NJ
254	CAT	Chatham NJ
268	RT	New York (JFK) NY

Thanks for the list, George. Remember, if you'd like to share what you hear with the rest of us, just send your loggings to me c/o Monitoring Times, P.O. Box 98, Brasstown, NC 28902.

SHED A TEAR DEPARTMENT -- It has now been noted officially that ELM/375 has been decommissioned. Just a couple of years ago it was getting its TWEB transmissions into the middle west with amazing regularity. Then the voice was discontinued and the CW ID was stronger than ever. Now there is only a silence where ELM used to be. It's almost like losing an old friend. Incidentally, there is a new beacon for the Elmira airport. It is ALP and is on 245 kHz.

That's it for this month. See you in Knoxville at the convention!

MT Program Team

Kannon Shanmugam, Program Manager

4412 Turnberry Circle
Lawrence, KS 66047

John Carson

Norman, Oklahoma

Jim Frimmel

Willow Park, Texas

Sunday

June 3rd, 10th, 17th, 24th

0008 Radio Canada Int'l: Coast to Coast. Aldo Marchini looks at opinions of Canadians on issues affecting them.
0030 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
0030 Radio Australia: Book Reading. Serialized readings from popular books.
0034 Radio Canada Int'l: Spotlight on Science. Bob Cadman examines the latest developments in science and technology.
0037 Radio Netherlands: Newsline. News analysis from correspondents worldwide.
0052 Radio Netherlands: Over to You. Listener letters and questions, and music selections.
0101 BBC: Play of the Week. Hour-long drama selections.
0108 Radio Canada Int'l: Spotlight on Science. See S 0034.
0130 Radio Australia: At Your Request. Dick Paterson plays music requests.
0134 Radio Canada Int'l: Listeners' Corner. Ian MacFarland presents listener comments, questions, and music requests.
0209 BBC: British Press Review. Survey of editorial opinion in the British press.
0215 BBC: The Learning World. John Turtle provides a look at education issues.
0230 BBC: Feature. Programming on various subjects.
0230 Radio Australia: Music/Information. Overnight music, interspersed with news.
0313 Radio Australia: Back Page. Brendon Telfer covers sporting issues of the Asian/Pacific region.
0315 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
0330 BBC: Panel Game. A quiz show of a topical nature.

0330 Radio Australia: Music/Information. See S 0230.
0337 Radio Netherlands: Newsline. See S 0037.
0352 Radio Netherlands: Over to You. See S 0052.
0404 Radio Canada Int'l: Double Exposure. A mocking look at the week's top news stories and newsmakers.
0407 Voice of Turkey: Review of the Turkish Press. A daily look at the Turkish newspapers.
0410 Voice of Turkey: Outlook. A look at Turkey's social and economic future.
0415 Voice of Turkey: Music. An interlude of classical Turkish music.
0420 Voice of Turkey: Turkish Album or DX Corner. A music and cultural interview program, or a program about shortwave radio.
0430 BBC: The Singing Stars. The careers of solo singers like Perry Como, Rosemary Clooney,



Noreen Alexander presents "Global Concerns," a program on environmental matters. The weekly series can be heard on the BBC World Service on Fridays at 0145 UTC, repeated at 1115 UTC.

Bobby Darin, and Frankie Laine (except June 28th: Musical Feature, music programming of a topical nature).

0430 Radio Australia: Back Page. See S 0313.
0434 Radio Canada Int'l: Listeners' Corner. See S 0134.
0445 BBC: Personal View. A personal opinion on topical issues in British life.
0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
0513 Radio Australia: Music of Radio Australia. Selections by Radio Australia announcers.
0530 BBC: Financial Review. A look back at the financial week.
0530 Radio Australia: Women of Asia. Patti Orifino speaks with Asian women about their lives and issues affecting them.
0540 BBC: Words of Faith. People share how their scripture gives meaning to their lives.
0545 BBC: Letter from America. Alistair Cooke's distinctly British view of America.
0630 BBC: Jazz for the Asking. A jazz music request show.
0630 Radio Australia: Australian Country Style. Eric Scott surveys the Australian country music scene.
0709 BBC: Twenty-Four Hours. See S 0509.
0713 Radio Australia: Music of Radio Australia. See S 0513.
0730 BBC: From Our Own Correspondent. See S 0315.
0730 Radio Australia: World of Country Music. A look at country music from all around the world.
0730 Radio Netherlands: Happy Station. Tom Meyer's family entertainment program with music and letters.
0745 BBC: Book Choice. Short reviews of current or future best-sellers.
0750 BBC: Waveguide. How to hear the BBC better.
1113 Radio Australia: Music of Radio Australia. See S 0513.
1115 BBC: From Our Own Correspondent. See S 0315.
1130 BBC: The Ken Bruce Show. See S 0030.
1130 Radio Australia: One World. Michael Wagner reports on environmental issues of the Asian/Pacific region.
1130 Radio Netherlands: Happy Station. See S 0730.
1201 BBC: Play of the Week. See S 0101.
1227 Radio Australia: Tattslotto Results. Do you have the winning number? Tune in and find out.

legend

- * The first four digits of an entry are the program start time in UTC.
- * The time is followed by the station name, program name, and a brief summary of the program's content.
- * Some listings may be followed by "See X 0000." The letter stands for a day of the week:

S=Sunday M=Monday
T=Tuesday W=Wednesday
H=Thursday F=Friday
A=Saturday

The four digits stand for a time in UTC. Listeners should check back to that date and time to find out more about that particular program.

- * All broadcasts are listed in chronological order, starting on Sunday at 0000 UTC and ending on Saturday at 2359 UTC.
- * All days are in UTC. Remember that if you are listening in North American prime time, it is actually the next morning UTC. For example, if you are listening to a program at 8:01 pm [EDT] on your Thursday night, that's equal to 0001 UTC and therefore Friday morning UTC.

We suggest that you tune in to a program a few minutes before the schedule start time, as some stations have tentative schedules which may slightly vary. Consult the frequency section beginning on page 65 for the frequencies in use by that station at that time.

newsline is your guide to news broadcasts on the air. All broadcasts are daily unless otherwise noted by brackets enclosing the day codes.

We invite listeners and stations to send program information to the program manager at the address above.

program

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1230 Radio Australia: Soundabout. Young, contemporary music from Australia and around the world.
 1304 Radio Canada Int'l (USA/Caribbean): Sunday Morning. A three-hour magazine program, covering virtually everything under the sun.
 1308 Radio Canada Int'l (Asia): Listeners' Corner. See S 0134.
 1313 Radio Australia: Sports Report. Results and reports on sporting events from the world over.
 1330 Radio Australia: Music of Radio Australia. See S 0513.
 1345 BBC: Sports Roundup. The day's sports news.
 1401 BBC: Feature. Programming on various subjects.
 1430 BBC: Anything Goes. Sounds from the BBC archives as requested by listeners.

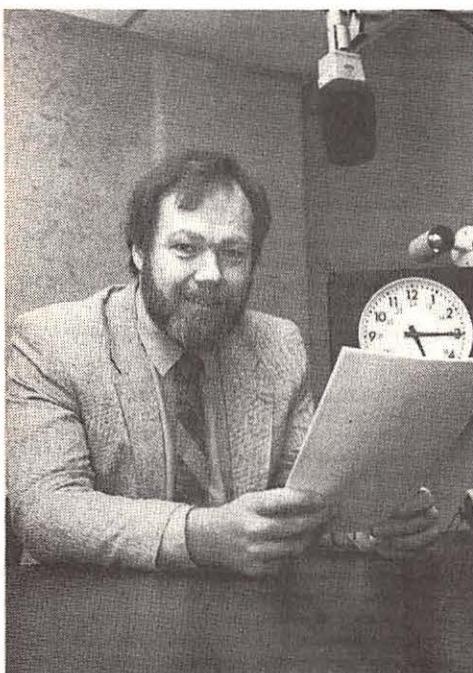
1430 Radio Australia: Communicator. The latest developments in the media and communications world.
 1430 Radio Netherlands: Happy Station. See S 0730.
 1513 Radio Australia: Music of Radio Australia. See S 0513.
 1515 BBC: Concert Hall. Classical music performances from the world's great halls.
 1530 Radio Australia: Education Focus. Education issues of the Asian/Pacific region, with Trevor Robertson.
 1615 BBC: Feature. See S 0230.
 1623 Radio Canada Int'l: Current Affairs. In-depth news programming.
 1630 Radio Australia: Music of Radio Australia. See S 0513.
 1630 Radio Netherlands: Happy Station. See S 0730.
 1645 BBC: Letter from America. See S 0545.
 1645 Radio Australia: Sports Report. See S 1313.
 2305 BBC: Words of Faith. See S 0540.
 2307 Voice of Turkey: Review of the Turkish Press. See S 0407.
 2308 Radio Canada Int'l (Caribbean): Shortwave Listeners' Digest. Ian MacFarland with DX news and features.
 2310 BBC: Book Choice. See S 0745.
 2310 Voice of Turkey: Turkish Mangonels. What's a mangonel? A Middle Ages war machine for hurling stones.
 2313 Radio Australia: Sports Report. See S 1313.
 2315 BBC: Letter from America. See S 0545.
 2318 Voice of Turkey: Turkish Pop Music. Recent Ottoman pop music.
 2327 Voice of Turkey: From Turkey with Love. Visits to historical regions of Turkey.
 2330 BBC: Feature. See S 1401.
 2330 Radio Australia: Music/Information. See S 0230.
 2334 Radio Canada Int'l (USA): Double Exposure. See S 0404.
 2342 Voice of Turkey: Music. See S 0415.

Monday

June 4th, 11th, 18th, 25th

0008 Radio Canada Int'l: L'Altitude. Aldo Marchini presents a look at the arts in Canada.
 0030 BBC: In Praise of God. A half-hour program of worship.
 0030 Radio Australia: Just Out. Rob Hoskin plays recent Australian music releases.

0030 Radio Netherlands: Happy Station. See S 0730.
 0034 Radio Canada Int'l: Listeners' Corner. See S 0134.
 0101 BBC: Feature. Programming on various subjects (except June 4th: Opera of the Week, background and excerpts from opera).
 0108 Radio Canada Int'l: L'Altitude. See Radio Canada Int'l: 0008.
 0130 Radio Australia: Music/Information. See S 0230.
 0134 Radio Canada Int'l: Coast to Coast. See S 0008.
 0145 BBC: Musical Feature. Music programming of a topical nature (except June 4th: Off the Record, a history of classical music recordings).
 0209 BBC: British Press Review. See S 0209.
 0215 BBC: Andy Kershaw's World of Music. Exotic and innovative music from the world over.
 0230 BBC: Science in Action. The latest in scientific developments.
 0230 Radio Australia: Music/Information. See S 0230.
 0313 Radio Australia: Sports Report. See S 1313.
 0315 BBC: Good Books. A recommendation of a book to read.
 0330 BBC: Anything Goes. See S 1430.
 0330 Radio Australia: Ring the Bells. Details not available at press time.
 0330 Radio Netherlands: Happy Station. See S 0730.
 0407 Voice of Turkey: Review of the Turkish Press. See S 0407.
 0408 Radio Canada Int'l: Innovation Canada. Bob Cadman looks at Canada's new ideas and technological developments.
 0410 Voice of Turkey: Turkish Mangonels. See S 2310.
 0418 Voice of Turkey: Turkish Pop Music. See S 2318.
 0427 Voice of Turkey: From Turkey with Love. See S 2327.
 0430 BBC: Off the Shelf. A reading selected from the best of world literature.
 0430 Radio Australia: Matters of Faith. Dallas Adair examines the doctrines and beliefs of Asian/Pacific faiths.
 0438 Radio Canada Int'l: Current Affairs. See S 1623.
 0442 Voice of Turkey: Music. See S 0415.
 0445 BBC: Tech Talk. A series of reports on engineering and technology.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0513 Radio Australia: Music of Radio Australia. See S 0513.



Jim Craig, announcer-producer for Radio Canada International's English Service.

0000 BBC: Newsdesk
 0000 Christian Science Monitor: News
 0000 Kol Israel: News
 0000 KVOH: UPI News [T-A]
 0000 Radio Australia: International Report
 0000 Radio Beijing: News
 0000 Radio Canada Int'l: News [S-M]
 0000 Radio Havana Cuba: International News [M-A]
 0000 Radio Moscow: News
 0000 Radio New Zealand Int'l: News
 0000 Radio Yugoslavia: News
 0000 Spanish National Radio: News
 0000 Voice of America: News
 0000 WWC: USA Radio News [T-A]
 0005 Radio Pyongyang: News
 0010 Radio Beijing: News About China
 0030 Christian Science Monitor: News [T-F]
 0030 HCJB: Latin American News
 0030 Radio Budapest: News
 0030 Radio Havana Cuba: Newsbreak [M-A]
 0030 Radio Moscow (World Service): News in Brief
 0030 Radio Netherlands: News [T-S]
 0030 Voice of America (Americas, E. Asia): News [T-S]
 0030 Voice of America (E. Asia): News (English) [M]
 0051 Spanish National Radio: News Summary [S]
 0055 KUSW: News [T-S]

0055 WRNO: ABC News [W-H, A]
 0100 BBC: News Summary
 0100 Belize Radio One: Network News
 0100 Christian Science Monitor: News
 0100 Deutsche Welle: World News
 0100 Kol Israel: News
 0100 KVOH: UPI News [T-A]
 0100 Radio Australia: World and Australian News
 0100 Radio Berlin Int'l: News
 0100 Radio Canada Int'l: News [S-M]
 0100 Radio Havana Cuba: International News [M-A]
 0100 Radio Japan: News
 0100 Radio Moscow: News
 0100 Radio New Zealand Int'l: News
 0100 Radio Prague: News
 0100 Radiotelevisione Italiana: News
 0100 RAE, Buenos Aires: News
 0100 Spanish National Radio: News
 0100 Voice of America: News
 0100 Voice of Indonesia: News
 0100 WWC: USA Radio News [T-S]
 0115 Radio Havana Cuba: Cuban Nat'l News [M-A]
 0125 HCJB: World News
 0130 Christian Science Monitor: News [T-F]
 0130 Radio Havana Cuba: News [M-A]
 0130 Radio Moscow (World Service): News in Brief

0145 Radio Berlin Int'l: News
 0151 Spanish National Radio: News Summary [S]
 0155 KUSW: News [T-S]
 0155 Voice of Indonesia: News in Brief
 0200 BBC: World News
 0200 Christian Science Monitor: News
 0200 Deutsche Welle: World News
 0200 Radio Australia: International Report
 0200 Radio Bras, Brasilia: News
 0200 Radio Canada Int'l: News [T-A]
 0200 Radio Havana Cuba: International News [M-A]
 0200 Radio Kiev: News
 0200 Radio Moscow: News
 0200 Radio New Zealand Int'l: News [A-S]
 0200 Radio Romania Int'l: News
 0200 Radio RSA: News
 0200 Swiss Radio Int'l: News
 0200 Voice of America: News
 0200 Voice of Free China: News and Commentary
 0200 WWC: USA Radio News [T-A]
 0215 Radio Cairo: News
 0230 Christian Science Monitor (E. Africa): News [M]
 0230 Christian Science Monitor: News [T-F]
 0230 HCJB: Latin American News
 0230 Radio Berlin Int'l: News
 0230 Radio Havana Cuba: Newsbreak [M-A]

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the program file

June 1990

RADIO NETHERLANDS FEATURES: Here's a look at what's happening on Radio Netherlands' Wednesday/Thursday feature program this month. On June 6th, RN looks at mechanical music instruments in the third and final part of "Pins, Paper and Pipes." June 13th looks at the world's largest port -- the city of "Rotterdam."

And a twelve-part series kicks off June 20th. "The Netherlands Antilles and Surinam" will focus on the Dutch holdings in South America and the Caribbean which are currently being decolonized. That series runs through September 5th.

The programs can be heard on Wednesdays at 0752 UTC, repeated at 1152 UTC, 1452 UTC, and 1652 UTC, and on Thursdays at 0052 UTC and 0352 UTC.

PROGRAM GUIDE CHANGES: Lots of renaming this month in the *MT* Program Guide; the former News Guide is now entitled Newsline, and this section (the former Bulletin Board) is now called the Program File.

And speaking of the Newsline, this month we'd like to have your comments on the Newsline. Specifically: do you find it useful? Do you have any suggestions on how it could be improved? Are there any stations you would like to see included?

Your feedback on these questions -- and anything else in the section -- is welcomed as always. The Program Guide address is 4412 Turnberry Circle, Lawrence, KS 66047. Thanks for your ongoing support.

-- Kannon Shanmugam
Program Manager

- 0530 BBC: Waveguide. See S 0750.
- 0530 Radio Australia: This Australia. Documentaries about the land "down under".
- 0530 Radio Canada Int'l: Inside Track. A sports feature magazine.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
- 0630 BBC: Feature. See S 1401.
- 0630 Radio Australia: Music of Radio Australia. See S 0513.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0713 Radio Australia: Pacific Sunrise. Business and export development in the Pacific basin.
- 0730 BBC: Feature. See S 0230.
- 0730 Radio Australia: Communicator. See S 1430.
- 0737 Radio Netherlands: Newsline. See S 0037.
- 0752 Radio Netherlands: The Research File. A science and technology review, covering the latest discoveries and developments.

- 1113 Radio Australia: Music of Radio Australia. See S 0513.
- 1115 BBC: Health Matters. New developments in the world of medical science and fitness.
- 1130 BBC: Composer of the Month. A month-long series on a particular classical music composer.
- 1130 Radio Australia: Land and Culture. Indigenous issues in Australia presented by Trevor Robertson.
- 1137 Radio Netherlands: Newsline. See S 0037.
- 1152 Radio Netherlands: The Research File. See M 0752.
- 1215 BBC: Round Britain Quiz. A resident London team takes on teams from around Britain in a cryptic quiz.
- 1230 Radio Australia: Soundabout. See S 1230.
- 1230 Radio Canada Int'l: North Country. Sports, weather, and the stock market report.
- 1245 BBC: Sports Roundup. See S 1330.
- 1309 BBC: Twenty-Four Hours. See S 0509.

- 1313 Radio Australia: Sports Report. See S 1313.
- 1315 Radio Canada Int'l: Current Affairs. See S 1623.
- 1330 BBC: Andy Kershaw's World of Music. See M 0215.
- 1330 Radio Australia: Music of Radio Australia. See S 0513.
- 1345 BBC: Personal View. See S 0445.
- 1405 BBC: Outlook. Conversation, controversy, and color from Britain and the rest of the world.
- 1425 Radio Australia: Stock Exchange Report. Financial news from Sydney and other exchanges.
- 1430 BBC: Off the Shelf. See M 0430.
- 1430 Radio Australia: Points of Law. Details not available at press time.
- 1437 Radio Netherlands: Newsline. See S 0037.
- 1445 BBC: The Learning World. See S 0215.
- 1452 Radio Netherlands: The Research File. See M 0752.
- 1513 Radio Australia: Pacific Sunrise. See M 0713.
- 1515 BBC: Musical Feature (except June 4th: Opera of the Week). See M 0101.
- 1530 Radio Australia: Music of Radio Australia. See S 0513.
- 1545 Radio Australia: Word of Mouth. Oral histories of Australians.
- 1615 BBC: Good Books. See M 0315.
- 1623 Radio Canada Int'l: Current Affairs. See S 1623.
- 1630 BBC: Health Matters. See M 1115.
- 1630 Radio Australia: Music of Radio Australia. See S 0513.
- 1637 Radio Netherlands: Newsline. See S 0037.
- 1645 BBC: The World Today. News analysis on a selected location or event in the news.
- 1645 Radio Australia: Sports Report. See S 1313.
- 1652 Radio Netherlands: The Research File. See M 0752.
- 2305 BBC: Commentary. Background to the news from a wide range of specialists.
- 2307 Voice of Turkey: Review of the Turkish Press. See S 0407.
- 2308 Radio Canada Int'l (Caribbean): Current Affairs. See S 1623.
- 2310 BBC: Financial News. News of commodity prices and significant moves in currency and stock markets.
- 2311 Voice of Turkey: Last Week. A review of the top world news of the past week, with commentary.
- 2313 Radio Australia: Sports Report. See S 1313.
- 2315 BBC: Feature. Programming on various subjects.
- 2317 Voice of Turkey: Development of Turkish Democracy. The steps of the Turkish

newsline cont'd from p.57

- 0230 Radio Moscow (World Service): News In Brief
- 0230 Radio Pakistan: News (Special English)
- 0230 Radio Portugal: News [T-A]
- 0230 Radio Tirana, Albania: News
- 0250 Radio Yerevan: News
- 0255 KUSW: News [T-S]
- 0300 BBC: World News
- 0300 Belize Radio One: News
- 0300 Christian Science Monitor: News
- 0300 Deutsche Welle: World News
- 0300 Radio Australia: World and Australian News
- 0300 Radio Beijing: News
- 0300 Radio Berlin Int'l: News
- 0300 Radio for Peace Int'l: News [T,A]
- 0300 Radio Havana Cuba: International News [M-A]
- 0300 Radio Japan: News
- 0300 Radio Moscow: News
- 0300 Radio New Zealand Int'l: News [A-S]
- 0300 Radio Prague: News
- 0300 RAE, Buenos Aires: News
- 0300 Voice of America: News
- 0300 Voice of Free China: News and Commentary
- 0300 Voice of Turkey: News

- 0300 WRNO: ABC News [F]
- 0300 WWCR: USA Radio News [T-S]
- 0309 BBC: News About Britain
- 0310 Radio Beijing: News About China
- 0315 Radio Cairo: News
- 0315 Radio France Int'l: News
- 0315 Radio Havana Cuba: Cuban Nat'l News [M-A]
- 0325 HCJB: World News
- 0330 Christian Science Monitor (E.Africa): News [M]
- 0330 Christian Science Monitor: News [T-F]
- 0330 Radio Havana Cuba: News [M-A]
- 0330 Radio Moscow (World Service): News In Brief
- 0330 Radio Netherlands: News [T-S]
- 0330 Radio Tirana, Albania: News
- 0330 UAE Radio, Dubai: News
- 0345 Radio Berlin Int'l: News
- 0350 Radiotelevisione Italiana: News
- 0355 KUSW: News [T-S]
- 0400 BBC: Newsdesk
- 0400 Christian Science Monitor: News
- 0400 Deutsche Welle: World News
- 0400 Kol Israel: News
- 0400 Radio Australia: International Report
- 0400 Radio Beijing: News
- 0400 Radio Canada Int'l: News
- 0400 Radio Havana Cuba: International News [M-A]

- 0400 Radio Moscow: News
- 0400 Radio New Zealand Int'l: News
- 0400 Radio Romania Int'l: News
- 0400 Radio Tanzania: News
- 0400 Swiss Radio Int'l: News
- 0400 Voice of America: News
- 0400 WWCR: USA Radio News [M-A]
- 0405 Radio Pyongyang: News
- 0410 Radio Beijing: News About China
- 0425 Radiotelevisione Italiana: News
- 0430 Christian Science Monitor (E.Africa): News [M]
- 0430 Christian Science Monitor: News [T-F]
- 0430 Radio Canada Int'l: News [M-F]
- 0430 Radio Havana Cuba: Newsbreak [M-A]
- 0430 Radio Moscow (World Service): News In Brief
- 0430 Radio Tirana, Albania: News
- 0455 KUSW: News [S, T-F]
- 0455 Radio Tanzania: News
- 0500 BBC: World News
- 0500 Christian Science Monitor: News
- 0500 Deutsche Welle: World News
- 0500 HCJB: Latin American News
- 0500 Radio Australia: World and Australian News
- 0500 Radio Beijing: News
- 0500 Radio Berlin Int'l: News
- 0500 Radio Havana Cuba: International News [M-A]

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government toward democratic society.
 2325 Voice of Turkey: Music. See S 0415.
 2330 BBC: Multitrack 1. Tim Smith presents what's hot on the British pop music charts.
 2330 Radio Australia: Music/Information. See S 0230.
 2330 Radio Canada Int'l (USA): As It Happens. A detailed look at the people and events making news in Canada and abroad.
 2330 Voice of Turkey: Profiles. An in-depth look at a well-known person in Turkish culture.

Tuesday

June 5th, 12th, 19th, 26th

0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
 0030 Radio Australia: Music/Information. See S 0230.
 0037 Radio Netherlands: Newsline. See S 0037.
 0052 Radio Netherlands: The Research File. See M 0752.
 0101 BBC: Outlook. See M 1405.
 0125 BBC: Financial News. See M 2310.
 0130 BBC: Short Story. Brief tales written by BBC listeners.
 0130 Radio Australia: Music/Information. See S 0230.
 0145 BBC: Europe's World. A magazine program reflecting life in Europe and its links with other parts of the world.
 0204 Radio Canada Int'l: As It Happens. See M 2330.
 0209 BBC: British Press Review. See S 0209.
 0215 BBC: Network UK. A look at the issues and events that affect the lives of people throughout the UK.
 0230 BBC: Sports International. Feature program on a topic or person making sports headlines.
 0230 Radio Australia: Music/Information. See S 0230.
 0313 Radio Australia: Sports Report. See S 1313.
 0315 BBC: The World Today. See M 1645.
 0330 BBC: John Peel. Tracks from newly released albums and singles from the contemporary music scene.
 0330 Radio Australia: Music/Information. See S 0230.
 0337 Radio Netherlands: Newsline. See S 0037.
 0352 Radio Netherlands: The Research File. See M 0752.

0407 Voice of Turkey: Review of the Turkish Press. See S 0407.
 0408 Radio Canada Int'l: As It Happens. See M 2330.
 0411 Voice of Turkey: Last Week. See M 2311.
 0417 Voice of Turkey: Development of Turkish Democracy. See M 2317.
 0425 Voice of Turkey: Music. See S 0415.
 0430 BBC: Off the Shelf. See M 0430.
 0430 Radio Australia: World of Country Music. See S 0730.
 0430 Voice of Turkey: Profiles. See M 2330.
 0438 Radio Canada Int'l: Current Affairs. See S 1623.
 0445 BBC: New Ideas. A radio shop window for new products and inventions.
 0455 BBC: Book Choice. See S 0745.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0513 Radio Australia: Music of Radio Australia. See S 0513.
 0530 BBC: Financial News. See M 2310.
 0530 Radio Australia: Points of Law. See M 1430.
 0530 Radio Canada Int'l: Open House. The effect

of religion on politics, social justice, and personal relations.
 0530 Radio Canada Int'l: The Food Show. Not Julia Child or the Frugal Gourmet, but better yet.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0630 BBC: Counterpoint. Paul Jones presents R&B, jazz, soul, and pop music.
 0630 Radio Australia: Music of Radio Australia. See S 0513.
 0709 BBC: Twenty-Four Hours. See S 0509.
 0713 Radio Australia: Music of Radio Australia. See S 0513.
 0730 BBC: Europe's World. See T 0145.
 0730 Radio Australia: Monitor. A look at the impact of science and technology on society.
 0737 Radio Netherlands: Newsline. See S 0037.
 0745 BBC: Network UK. See T 0215.
 0752 Radio Netherlands: Images. A cultural magazine, highlighting film, theatre, opera, books, and music.



Radio Beijing's newsroom staff pose for the camera

0500 Radio Japan: News
 0500 Radio Korea: News
 0500 Radio Moscow: News
 0500 Radio New Zealand Int'l: News
 0500 Spanish National Radio: News
 0500 Voice of America: News
 0500 WWCR: USA Radio News [T-A]
 0510 Radio Beijing: News About China
 0515 Radio Berlin Int'l: News
 0515 Radio Canada Int'l: News [M-F]
 0515 Radio Havana Cuba: Cuban Nat'l News [M-A]
 0530 Christian Science Monitor (E.Africa): News [M]
 0530 Christian Science Monitor: News [T-F]
 0530 Radio Havana Cuba: News [M-A]
 0530 Radio Jordan: News
 0530 Radio Moscow (World Service): News in Brief
 0530 Radio Romania Int'l: News
 0530 UAE Radio, Dubai: News
 0551 Spanish National Radio: News Summary [S]
 0555 HCJB: World News
 0555 KUSW: News [S, T-F]
 0600 BBC: Newsdesk
 0600 Christian Science Monitor: News
 0600 Deutsche Welle: World News
 0600 Radio Australia: International Report
 0600 Radio Havana Cuba: International News [M-A]

0600 Radio Moscow: News
 0600 Radio New Zealand Int'l: News
 0600 Voice of America: News
 0605 Radio Pyongyang: News
 0630 Christian Science Monitor: News [M-F]
 0630 Radio Finland: Northern Report [T-A]
 0630 Radio Havana Cuba: Newsbreak [M-A]
 0630 Radio Moscow (World Service): News in Brief
 0630 Radio Polonia: News
 0630 Radio Tirana, Albania: News
 0630 Swiss Radio Int'l: News
 0645 Radio Romania Int'l: News
 0655 KUSW: News [S]
 0700 BBC: World News
 0700 BRT, Brussels: News [M-F]
 0700 Christian Science Monitor: News
 0700 Radio Australia: World and Australian News
 0700 Radio Havana Cuba: International News [M-A]
 0700 Radio Japan: News
 0700 Radio Korea: News
 0700 Radio Moscow (World Service): News
 0700 Radio New Zealand Int'l: News [A-S]
 0700 Radio Tirana, Albania: News
 0700 Voice of Free China: News and Commentary
 0715 Radio Havana Cuba: Cuban Nat'l News [M-A]
 0730 Christian Science Monitor: News [M-F]

0730 HCJB: Latin American News
 0730 Radio Havana Cuba: News [M-A]
 0730 Radio Moscow (World Service): News in Brief
 0730 Radio Netherlands: News [M-A]
 0745 Radio Berlin Int'l: News
 0755 KUSW: News [S]
 0800 BBC: World News
 0800 Christian Science Monitor: News
 0800 Radio Australia: International Report
 0800 Radio Finland: Northern Report [T-S]
 0800 Radio Jordan: News Summary
 0800 Radio Moscow (World Service): News
 0800 Voice of Indonesia: News
 0805 Radio Pyongyang: News
 0825 HCJB: World News
 0830 Christian Science Monitor: News [M-F]
 0830 Radio Beijing: News
 0830 Radio Finland: Northern Report [T-S]
 0830 Radio Moscow (World Service): News in Brief
 0830 Radio Netherlands: News [M-A]
 0830 Swiss Radio Int'l: News
 0840 Radio Beijing: News About China
 0855 KUSW: News [S]
 0855 Voice of Indonesia: News in Brief
 0900 BBC: World News
 0900 BRT, Brussels: News [M-F]

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1113 Radio Australia: Music of Radio Australia. See S 0513.
 1115 BBC: Waveguide. See S 0750.
 1125 BBC: Book Choice. See S 0745.
 1130 BBC: Megamix. See T 0030.
 1130 Radio Australia: Business Horizons. Peter Hannam reviews business and trade in the Asian/Pacific region.
 1137 Radio Netherlands: Newsline. See S 0037.
 1152 Radio Netherlands: Images. See T 0752.
 1215 BBC: Multitrack 1: Top 20. See M 2330.
 1230 Radio Australia: Soundabout. See S 1230.
 1230 Radio Canada Int'l: North Country. See M 1230.
 1245 BBC: Sports Roundup. See S 1330.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1313 Radio Australia: Sports Report. See S 1313.
 1315 Radio Canada Int'l: Current Affairs. See S 1623.
 1330 BBC: Network UK. See T 0215.
 1330 Radio Australia: Music of Radio Australia. See S 0513.
 1345 BBC: The Singing Stars (except June 26th: Musical Feature). See S 0430.
 1405 BBC: Outlook. See M 1405.
 1425 Radio Australia: Stock Exchange Report. See M 1425.
 1430 BBC: Off the Shelf. See M 0430.
 1430 Radio Australia: Interaction. An exploration of the experiences of multicultural Australia, with Nick Kaye.
 1437 Radio Netherlands: Newsline. See S 0037.
 1445 BBC: Musical Feature (except June 5th: Off the Record). See M 0145.
 1452 Radio Netherlands: Images. See T 0752.
 1513 Radio Australia: Music of Radio Australia. See S 0513.
 1515 BBC: A Jolly Good Show. Dave Lee Travis presents listener record requests and dedications, and the UK's top ten albums.
 1530 Radio Australia: AgriNews. News about agriculture of the Asian/Pacific region, with Denis Gibbons.
 1615 BBC: Omnibus. A half-hour program on practically any topic.
 1623 Radio Canada Int'l: Current Affairs. See S 1623.
 1630 Radio Australia: Music of Radio Australia. See S 0513.
 1637 Radio Netherlands: Newsline. See S 0037.
 1645 BBC: The World Today. See M 1645.
 1645 Radio Australia: Sports Report. See S 1313.
 1652 Radio Netherlands: Images. See T 0752.
 2305 BBC: Commentary. See M 2305.
 2307 Voice of Turkey: Review of the Turkish Press. See S 0407.

newsline cont'd from p.59

0900 Christian Science Monitor: News
 0900 Deutsche Welle: World News
 0900 Radio Australia: World and Australian News
 0900 Radio Berlin Int'l: News
 0900 Radio Japan: News
 0900 Radio Moscow (World Service): News
 0900 Radio New Zealand Int'l: News
 0930 Christian Science Monitor: News [M-F]
 0930 Deutsche Welle: African News [M]
 0930 Radio Beijing: News
 0930 Radio Moscow (World Service): News in Brief
 0940 Radio Beijing: News About China
 0945 Radio Berlin Int'l: News
 0955 KUSW: News [S]
 1000 BBC: News Summary
 1000 Christian Science Monitor: News
 1000 HCJB: Latin American News
 1000 Kol Israel: News
 1000 Radio Australia: International Report
 1000 Radio Jordan: News Summary
 1000 Radio Korea: News
 1000 Radio Moscow (World Service): News
 1000 Radio New Zealand Int'l: News



Announcer-Producer Gillian McCormack of Radio Canada International's English Service

2308 Radio Canada Int'l (Caribbean): Current Affairs. See S 1623.
 2310 BBC: Financial News. See M 2310.
 2313 Radio Australia: Sports Report. See S 1313.
 2315 BBC: Concert Hall. See S 1515.
 2315 Voice of Turkey: The Emergence of Modern Turkey and Kemal Ataturk. A look at how Turkey was influenced by one of its early leaders.
 2325 Voice of Turkey: Music. See S 0415.
 2330 Radio Australia: Music/Information. See S 0230.
 2330 Radio Canada Int'l (USA): As It Happens. See M 2330.
 2330 Voice of Turkey: Turkish Artists of International Renown. Music from well-known Turkish performers.

Wednesday

June 6th, 13th, 20th, 27th

0030 BBC: Omnibus. See T 1615.
 0030 Radio Australia: Music/Information. See S 0230.
 0037 Radio Netherlands: Newsline. See S 0037.
 0052 Radio Netherlands: Images. See T 0752.
 0101 BBC: Outlook. See M 1405.
 0125 BBC: Financial News. See M 2310.
 0130 BBC: A Voice of Our Own. A day in the life of ethnic newspapers in the UK (except June 20th, 27th: Feature, programming on various subjects).
 0130 Radio Australia: Music/Information. See S 0230.
 0145 BBC: Country Style. David Allan presents British country music.
 0204 Radio Canada Int'l: As It Happens. See M 2330.
 0209 BBC: British Press Review. See S 0209.
 0215 BBC: Health Matters. See M 1115.
 0230 BBC: Counterpoint. See T 0630.
 0230 Radio Australia: Book Reading. See S 0030.
 0313 Radio Australia: Sports Report. See S 1313.
 0315 BBC: The World Today. See M 1645.
 0330 BBC: Discovery. An in-depth look at scientific research.
 0330 Radio Australia: Music/Information. See S 0230.
 0337 Radio Netherlands: Newsline. See S 0037.
 0352 Radio Netherlands: Images. See T 0752.
 0407 Voice of Turkey: Review of the Turkish Press. See S 0407.
 0408 Radio Canada Int'l: As It Happens. See M 2330.
 0415 Voice of Turkey: The Emergence of Modern Turkey and Kemal Ataturk. See T 2315.
 0425 Voice of Turkey: Music. See S 0415.
 0430 BBC: Off the Shelf. See M 0430.
 0430 Radio Australia: Music of Radio Australia. See S 0513.
 0430 Voice of Turkey: Turkish Artists of International Renown. See T 2330.
 0438 Radio Canada Int'l: Current Affairs. See S 1623.
 0445 BBC: Country Style. See W 0145.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0513 Radio Australia: Music of Radio Australia. See S 0513.
 0530 BBC: Financial News. See M 2310.
 0530 Radio Australia: Education Focus. See S 1530.

1000 Radio Tanzania: News
 1000 Swiss Radio Int'l: News
 1000 Voice of America: News
 1030 Radio Moscow (World Service): News in Brief
 1030 Radio Netherlands: News [M-A]
 1030 UAE Radio, Dubai: News
 1055 HCJB: World News
 1055 KUSW: News [S]
 1100 BBC: World News
 1100 Christian Science Monitor: News [M-F]
 1100 Deutsche Welle: World News
 1100 Radio Australia: World and Australian News
 1100 Radio Beijing: News
 1100 Radio Berlin Int'l: News
 1100 Radio Finland: Northern Report [T-F]
 1100 Radio Japan: News
 1100 Radio Jordan: News Summary
 1100 Radio Moscow (World Service): News
 1100 Radio New Zealand Int'l: News
 1100 Radio RSA: News
 1100 Swiss Radio Int'l: News
 1100 Trans World Radio, Bonaire: News [M-F]
 1100 Voice of America: News
 1105 Radio Pakistan: News (Special English)
 1105 Radio Pyongyang: News
 1109 BBC: News About Britain

1110 Belize Radio One: News Summary [T-F]
 1110 Radio Beijing: News About China
 1120 Belize Radio One: News Summary [A]
 1125 Belize Radio One: News Summary [M]
 1130 Christian Science Monitor: News
 1130 Deutsche Welle: African News [M]
 1130 Radio Berlin Int'l: News
 1130 Radio Moscow (World Service): News in Brief
 1130 Radio Netherlands: News [M-A]
 1152 Radio RSA: News in Brief
 1155 KUSW: News [S]
 1200 BBC: News Summary [S]; Newsreel [M-A]
 1200 Christian Science Monitor: News [M-F]
 1200 Radio Australia: International Report
 1200 Radio Beijing: News
 1200 Radio Canada Int'l: World Report [M-F]
 1200 Radio Finland: Northern Report [T-F]
 1200 Radio Jordan: News Summary
 1200 Radio Moscow (World Service): News
 1200 Radio New Zealand Int'l: News
 1200 Radio Polonia: News
 1200 Radio Romania Int'l: News
 1200 Radio RSA: News
 1200 Radio Tashkent: News
 1200 Radio Yugoslavia: News
 1200 Swiss Radio Int'l: News

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0530 Radio Canada Int'l: Open House. The effect of religion on politics, social justice, and personal relations.

0540 BBC: Words of Faith. See S 0540.

0545 BBC: The World Today. See M 1645.

0630 BBC: Meridian. The world of the arts, including music, drama, and books.

0630 Radio Australia: Ring the Bells. See M 0330.

0709 BBC: Twenty-Four Hours. See S 0509.

0713 Radio Australia: Music of Radio Australia. See S 0513.

0730 BBC: Development '90. Aid and development issues.

0730 Radio Australia: Land and Culture. See M 1130.

0737 Radio Netherlands: Newsline. See S 0037.

0752 Radio Netherlands: The Netherland Antilles and Surinam. Dutch decolonization and its effects (except June 6th, 13th: Feature, programming on various subjects).

1113 Radio Australia: Music of Radio Australia. See S 0513.

1115 BBC: Country Style. See W 0145.

1130 BBC: Meridian. See W 0630.

1130 Radio Australia: Science File. Science, medicine, and technology news for the Asian/Pacific region.

1152 Radio Netherlands: The Netherland Antilles and Surinam (except June 6th, 13th: Feature). See W 0752.

1206 Radio Netherlands: CDutch. Harry Kliphuis presents new Dutch compact disc recordings.

1215 BBC: Feature. Programming on various subjects.

1225 BBC: The Farming World. Issues in agriculture.

1227 Radio Australia: Tattslotto Results. See S 1227.

1230 Radio Australia: Soundabout. See S 1230.

1230 Radio Canada Int'l: North Country. See M 1230.

1245 BBC: Sports Roundup. See S 1330.

1309 BBC: Twenty-Four Hours. See S 0509.

1313 Radio Australia: Sports Report. See S 1313.

1315 Radio Canada Int'l: Current Affairs. See S 1623.

1330 BBC: Development '90. See W 0730.

1330 Radio Australia: Just Out. See M 0030.

1405 BBC: Outlook. See M 1405.

1425 Radio Australia: Stock Exchange Report. See M 1425.

1430 BBC: Off the Shelf. See M 0430.

1430 Radio Australia: Innovations. Desley Blanch reports on inventions and innovative practices.

1437 Radio Netherlands: Newsline. See S 0037.

1445 BBC: Business Matters. See W 0430.

1452 Radio Netherlands: The Netherland Antilles and Surinam (except June 6th, 13th: Feature). See W 0752.

1506 Radio Netherlands: CDutch. See W 1206.

1513 Radio Australia: Music of Radio Australia. See S 0513.

1515 BBC: Feature. See M 2315.

1530 BBC: Comedy. This month's offerings include the conclusion of "Winston Comes to Town" (June 6th, 13th) and "Two Cheers for June," a satirical look back at the month (June 27th).

1530 Radio Australia: Matters of Faith. See M 0430.

1615 BBC: Counterpoint. See T 0630.

1623 Radio Canada Int'l: Current Affairs. See S 1623.

1630 Radio Australia: Music of Radio Australia. See S 0513.

1637 Radio Netherlands: Newsline. See S 0037.

1645 BBC: The World Today. See M 1645.

1645 Radio Australia: Sports Report. See S 1313.

1652 Radio Netherlands: The Netherland Antilles and Surinam (except June 6th, 13th: Feature). See W 0752.

2305 BBC: Commentary. See M 2305.

2307 Voice of Turkey: Review of the Turkish Press. See S 0407.

2308 Radio Canada Int'l (Caribbean): Current Affairs. See S 1623.

2310 BBC: Financial News. See M 2310.

2312 Voice of Turkey: Review of the Foreign Media. A look at the foreign press as it affects Turkey.

2313 Radio Australia: Sports Report. See S 1313.

2315 BBC: Good Books. See M 0315.

2316 Voice of Turkey: Commentary. A short commentary on news from Turkey.

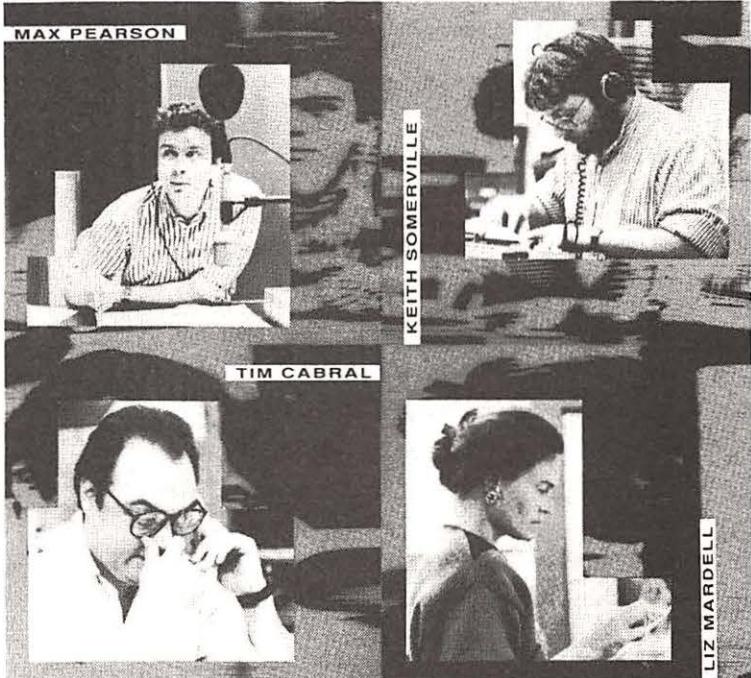
2325 Voice of Turkey: Letterbox. A program of listener letters, questions, and suggestions.

2330 BBC: Multitrack 2. Graham Bannerman presents new pop music records, interviews, news, and competitions.

2330 Radio Australia: Music/Information. See S 0230.

2330 Radio Canada Int'l (USA): As It Happens. See M 2330.

MAX PEARSON
The broadcast team of the BBC's "Newshour," heard daily at 2200 UTC.



1200 Voice of America: News

1210 Radio Beijing: News About China

1215 Radio Berlin Int'l: News

1230 BRT, Brussels: News [M-S]

1230 Christian Science Monitor: News

1230 Radio France Int'l: News

1230 Radio Moscow (World Service): News in Brief

1230 Radio Polonia: News

1230 Trans World Radio, Bonaire: News [M-A]

1230 Voice of Turkey: News

1245 Radio Berlin Int'l: News

1300 BBC: News and Twenty-Four Hours on Sunday [S]; World News [M-A]

1300 Belize Radio One: News

1300 Christian Science Monitor: News

1300 Christian Science Monitor: News [M-F]

1300 Radio Australia: World and Australian News

1300 Radio Beijing: News

1300 Radio Berlin Int'l: News

1300 Radio Canada Int'l: News

1300 Radio Finland: Northern Report [T-A]

1300 Radio Korea: News

1300 Radio Moscow (World Service): News

1300 Radio Peace and Progress: News

1300 Radio Romania Int'l: News

1300 Radio RSA: News

1300 Radio Tanzania: News [A-S]

1300 Radio Tirana, Albania: News

1300 Trans World Radio, Bonaire: News [S]

1300 Voice of America: News

1300 WWCR: USA Radio News [M-F]

1305 Radio Pyongyang: News

1310 Radio Beijing: News About China

1330 Christian Science Monitor: News [M-F]

1330 Radio Moscow (World Service): News in Brief

1330 Radio Tashkent: News

1330 Swiss Radio Int'l: News

1330 UAE Radio, Dubai: News

1330 Voice of America: News (Special English)

1345 Radio Berlin Int'l: News

1352 Radio RSA: News in Brief

1400 BBC: News Summary [A-S]; 5-Minute News [M-F]

1400 Christian Science Monitor: News

1400 Radio Australia: International Report

1400 Radio Beijing: News

1400 Radio France Int'l: News

1400 Radio Japan: News

1400 Radio Jordan: News Summary

1400 Radio Moscow (World Service): News

1400 Radio RSA: News

1400 Voice of America: News

1400 WWCR: USA Radio News [M-F]

1405 Radio Finland: Northern Report [T-A]

1405 Radio Pyongyang: News

1410 Radio Beijing: News About China

1430 Christian Science Monitor: News [M-F]

1430 Radio Moscow (World Service): News in Brief

1430 Radio Netherlands: News [M-A]

1430 Radio Polonia: News

1430 Radio Prague: News

1445 Radio Berlin Int'l: News

1500 BBC: Newsreel

1500 Belize Radio One: News [M-A]

1500 Christian Science Monitor: News

1500 Deutsche Welle: World News

1500 Radio Australia: World and Australian News

1500 Radio Beijing: News

1500 Radio Japan: News

1500 Radio Korea: News

1500 Radio Moscow (World Service): News

1500 Radio Romania Int'l: News

1500 Voice of America: News

1500 WHRI: News [M-A]

1500 WWCR: USA Radio News

1505 Radio Pyongyang: News

1510 Radio Beijing: News About China

1530 BRT, Brussels: News [M-S]

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Thursday

June 7th, 14th, 21st, 28th

0030 BBC: Comedy. See W 1530.
 0030 Radio Australia: Music/Information. See S 0230.
 0037 Radio Netherlands: Newsline. See S 0037.
 0052 Radio Netherlands: The Netherland Antilles and Surinam (except June 7th, 14th: Feature). See W 0752.
 0101 BBC: Outlook. See M 1405.
 0106 Radio Netherlands: CDutch. See W 1206.
 0125 BBC: Financial News. See M 2310.
 0130 BBC: Waveguide. See S 0750.
 0130 Radio Australia: Music/Information. See S 0230.
 0140 BBC: Book Choice. See S 0745.
 0145 BBC: Society Today. A weekly look at the changes in Britain.
 0204 Radio Canada Int'l: As It Happens. See M 2330.
 0209 BBC: British Press Review. See S 0209.
 0215 BBC: Network UK. See T 0215.
 0230 BBC: Assignment. Examinations of current topical issues.
 0230 Radio Australia: Music/Information. See S 0230.
 0313 Radio Australia: Sports Report. See S 1313.
 0315 BBC: The World Today. See M 1645.
 0330 BBC: Round Britain Quiz. See M 1215.
 0330 Radio Australia: Music/Information. See S 0230.
 0337 Radio Netherlands: Newsline. See S 0037.
 0352 Radio Netherlands: The Netherland Antilles and Surinam (except June 7th, 14th: Feature). See W 0752.
 0406 Radio Netherlands: CDutch. See W 1206.
 0407 Voice of Turkey: Review of the Turkish Press. See S 0407.
 0408 Radio Canada Int'l: As It Happens. See M 2330.
 0412 Voice of Turkey: Review of the Foreign Media. See W 2312.
 0416 Voice of Turkey: Commentary. See W 2316.
 0425 Voice of Turkey: Letterbox. See W 2325.
 0430 BBC: Off the Shelf. See M 0430.
 0430 Radio Australia: Music of Radio Australia. See S 0513.
 0438 Radio Canada Int'l: Current Affairs. See S 1623.
 0445 BBC: Andy Kershaw's World of Music. See M 0215.
 0509 BBC: Twenty-Four Hours. See S 0509.

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1530 Christian Science Monitor: News [M-F]
 1530 Deutsche Welle: African News [M-F]
 1530 Radio Moscow (World Service): News in Brief
 1530 Radio Peace and Progress: News
 1530 Radio Prague: News
 1530 Radio Tirana, Albania: News
 1530 Swiss Radio Int'l: News
 1545 Radio Berlin Int'l: News
 1600 BBC: World News
 1600 Christian Science Monitor: News
 1600 Deutsche Welle: World News
 1600 Radio Australia: International Report
 1600 Radio Beijing: News
 1600 Radio France Int'l: News
 1600 Radio Jordan: News Summary
 1600 Radio Moscow (World Service): News
 1600 Radio Polonia: News
 1600 Radio Portugal: News [M-F]
 1600 Radio Tanzania: News
 1600 Voice of America: News
 1600 WWCR: USA Radio News [M-F]
 1609 BBC: News About Britain
 1610 Radio Beijing: News About China

0513 Radio Australia: Music of Radio Australia. See S 0513.
 0530 BBC: Financial News. See M 2310.
 0530 Radio Australia: AgriNews. See T 1530.
 0530 Radio Canada Int'l: Media File. The ethics, responsibilities, and performance of the media.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0630 BBC: Feature. See W 1215.
 0630 Radio Australia: At Your Request. See S 0130.

21st, 28th: Serial, excerpts from a book or play).
 1130 Radio Australia: AgriNews. See T 1530.
 1137 Radio Netherlands: Newsline. See S 0037.
 1152 Radio Netherlands: Media Network. See H 0752.
 1215 BBC: Multitrack 2. See W 1830.
 1230 Radio Australia: Soundabout. See S 1230.
 1230 Radio Canada Int'l: North Country. See M 1230.
 1245 BBC: Sports Roundup. See S 1330.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1313 Radio Australia: Sports Report. See S 1313.
 1315 Radio Canada Int'l: Current Affairs. See S 1623.
 1330 BBC: Network UK. See T 0215.
 1330 Radio Australia: Music of Radio Australia. See S 0513.
 1345 BBC: Folk in Britain or Jazz Scene UK. A look at folk or jazz music on the British Isles.
 1405 BBC: Outlook. See M 1405.
 1425 Radio Australia: Stock Exchange Report. See M 1425.
 1430 BBC: Off the Shelf. See M 0430.
 1430 Radio Australia: Monitor. See T 0730.
 1437 Radio Netherlands: Newsline. See S 0037.
 1445 BBC: Mediawatch. See H 0730.
 1452 Radio Netherlands: Media Network. See H 0752.
 1513 Radio Australia: Music of Radio Australia. See S 0513.
 1515 BBC: The Pleasure's Yours. Gordon Clyde presents classical music requests.
 1530 Radio Australia: Business Horizons. See T 1130.
 1615 BBC: Assignment. See H 0230.
 1623 Radio Canada Int'l: Current Affairs. See S 1623.
 1630 Radio Australia: Music of Radio Australia. See S 0513.
 1637 Radio Netherlands: Newsline. See S 0037.
 1645 BBC: The World Today. See M 1645.
 1645 Radio Australia: Sports Report. See S 1313.
 1652 Radio Netherlands: Media Network. See H 0752.
 2305 BBC: Commentary. See M 2305.
 2307 Voice of Turkey: Review of the Turkish Press. See S 0407.
 2308 Radio Canada Int'l (Caribbean): Current Affairs. See S 1623.
 2310 BBC: Financial News. See M 2310.
 2312 Voice of Turkey: Turkish World of Culture. Vivid descriptions and exotic sounds depicting aspects of life in Turkey.
 2313 Radio Australia: Sports Report. See S 1313.



Aida Zayim of the Voice of Turkey's Serbo-Croatian language department interviews a contest winner from Yugoslavia.

0640 BBC: The Farming World. See W 1225.
 0709 BBC: Twenty-Four Hours. See S 0509.
 0713 Radio Australia: Music of Radio Australia. See S 0513.
 0730 BBC: Mediawatch. Keith Hindell looks at developments in the media worldwide.
 0730 Radio Australia: Science File. See W 1130.
 0737 Radio Netherlands: Newsline. See S 0037.
 0745 BBC: Network UK. See T 0215.
 0752 Radio Netherlands: Media Network. Jonathan Marks surveys communications developments worldwide.
 1113 Radio Australia: Music of Radio Australia. See S 0513.
 1115 BBC: New Ideas. See T 0445.
 1125 BBC: Book Choice. See S 0745.
 1130 BBC: The Sittaford Mystery. A serial version of Agatha Christie's mystery tale (except June

1615 Radio Canada Int'l: News
 1630 Christian Science Monitor: News [M-F]
 1630 Radio Moscow (World Service): News in Brief
 1630 Radio Netherlands: News [M-A]
 1630 Radio Polonia: News
 1630 RAE, Buenos Aires: News
 1630 UAE Radio, Dubai: News
 1630 Voice of America (excl Africa): News (English)
 1655 KUSW: News [M-F]
 1700 BBC: World News [S-F]: News Summary [A]
 1700 Belize Radio One: News [M-F]
 1700 Christian Science Monitor: News
 1700 Kol Israel: News
 1700 Radio Australia: World and Australian News
 1700 Radio Beijing: News
 1700 Radio Japan: News
 1700 Radio Jordan: Newsdesk [S-T]
 1700 Radio Korea: News
 1700 Radio Moscow (World Service): News
 1700 Voice of America: News
 1705 Radio Pyongyang: News
 1710 Radio Beijing: News About China
 1715 Radio Berlin Int'l: News
 1730 BRT, Brussels: News
 1730 Christian Science Monitor: News [M-F]
 1730 Radio Moscow (World Service): News in Brief

1730 Radio Prague: News
 1730 Radio Romania Int'l: News
 1730 Swiss Radio Int'l: News
 1755 KUSW: News [M-A]
 1800 BBC: Newsdesk
 1800 Belize Radio One: Headline News [M-A]
 1800 Christian Science Monitor: News
 1800 Radio Australia: International Report
 1800 Radio Bras, Brasilia: News
 1800 Radio Canada Int'l: News
 1800 Radio Kiev: News
 1800 Radio Moscow (World Service): News
 1800 Radio RSA: News
 1800 Radio Tanzania: News
 1800 Voice of America: News
 1800 WWCR: USA Radio News [A]
 1803 Radio Jamahiriya, Libya: News Headlines
 1830 Belize Radio One: Network News
 1830 Christian Science Monitor: News [M-F]
 1830 Radio Berlin Int'l: News
 1830 Radio Budapest: News
 1830 Radio Canada Int'l: News [M-F]
 1830 Radio Finland: Northern Report [M-F]
 1830 Radio Kuwait: News
 1830 Radio Moscow (World Service): News in Brief
 1830 Radio Netherlands: News [M-A]

program

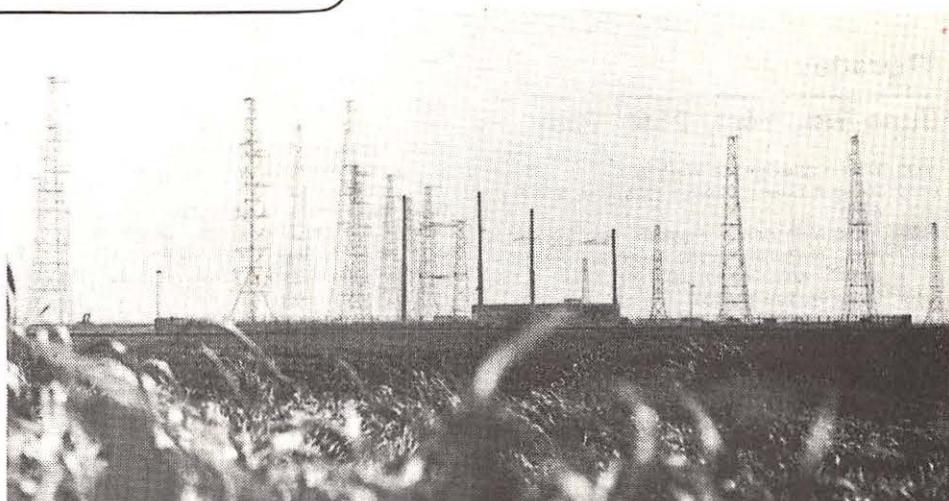
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2315 BBC: Music Review. Classical music events and developments from around the world.
 2330 Radio Australia: Music/Information. See S 0230.
 2330 Radio Canada Int'l (USA): As It Happens. See M 2330.
 2330 Voice of Turkey: Stones Have Stories to Tell. The history of Turkey and the Middle East.

Friday

June 1st, 8th, 15th, 22nd, 29th

0030 BBC: Tchaikovsky. The life of the great Russian composer.
 0030 Radio Australia: Music/Information. See S 0230.
 0037 Radio Netherlands: Newsline. See S 0037.
 0052 Radio Netherlands: Media Network. See H 0752.
 0101 BBC: Outlook. See M 1405.
 0125 BBC: Financial News. See M 2310.
 0130 BBC: Folk in Britain or Jazz Scene UK. See H 1345.
 0130 Radio Australia: Music/Information. See S 0230.
 0145 BBC: Global Concerns. Issues of an environmental nature.
 0204 Radio Canada Int'l: As It Happens. See M 2330.
 0209 BBC: British Press Review. See S 0209.
 0215 BBC: Seven Seas. A weekly program about ships and the sea.
 0230 BBC: The Slatford Mystery (except June 22nd, 29th; Serial). See H 1130.
 0230 Radio Australia: Music/Information. See S 0230.
 0313 Radio Australia: Sports Report. See S 1313.
 0315 BBC: The World Today. See M 1645.
 0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds of faith.
 0330 Radio Australia: Music/Information. See S 0230.
 0337 Radio Netherlands: Newsline. See S 0037.
 0352 Radio Netherlands: Media Network. See H 0752.
 0407 Voice of Turkey: Review of the Turkish Press. See S 0407.
 0408 Radio Canada Int'l: As It Happens. See M 2330.
 0412 Voice of Turkey: Turkish World of Culture. See H 2312.
 0430 BBC: Off the Shelf. See M 0430.



The directional curtain array at Radio Nederland's Flevo transmitter site.

0430 Radio Australia: Music of Radio Australia. See S 0513.
 0430 Voice of Turkey: Stones Have Stories to Tell. See H 2330.
 0438 Radio Canada Int'l: Current Affairs. See S 1623.
 0445 BBC: Folk in Britain or Jazz Scene UK. See H 1345.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0513 Radio Australia: Music of Radio Australia. See S 0513.
 0530 BBC: Financial News. See T 0125.
 0530 Radio Australia: Interaction. See T 1430.
 0530 Radio Canada Int'l: Arts Tonight. Interviews, panel discussions and reviews covering the arts.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0630 BBC: Meridian. See W 0630.
 0630 Radio Australia: Music of Radio Australia. See S 0513.
 0709 BBC: Twenty-Four Hours. See S 0509.
 0713 Radio Australia: Music of Radio Australia. See S 0513.
 0730 BBC: Feature. Programming on various subjects.
 0730 Radio Australia: Innovations. See W 1430.
 0737 Radio Netherlands: Newsline. See S 0037.
 0752 Radio Netherlands: Rembrandt Express. Pete Myers presents a magazine program.

1113 Radio Australia: Music of Radio Australia. See S 0513.
 1115 BBC: Global Concerns. See F 0145.
 1130 BBC: Meridian. See W 0630.
 1130 Radio Australia: Education Focus. See S 1530.
 1137 Radio Netherlands: Asiascan. A live magazine show with interviews with newsmakers, press reviews, monthly quizzes and listener opinion.
 1215 BBC: Feature. See F 0730.
 1230 Radio Australia: This Australia. See M 0530.
 1230 Radio Canada Int'l: North Country. See M 1230.
 1245 BBC: Sports Roundup. See S 1330.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1313 Radio Australia: Sports Report. See S 1313.
 1315 Radio Canada Int'l: Current Affairs. See S 1623.
 1330 BBC: Short Story. See T 0130.
 1330 Radio Australia: Music of Radio Australia. See S 0513.
 1345 BBC: Here's Humph! All that jazz with Humphrey Lyttelton.
 1405 BBC: Outlook. See M 1405.
 1425 Radio Australia: Stock Exchange Report. See M 1425.
 1430 BBC: Off the Shelf. See M 0430.
 1430 Radio Australia: Land and Culture. See M 1130.
 1437 Radio Netherlands: Asiascan. See F 1137.
 1445 BBC: Tech Talk. See M 0445.

1830 Radio Polonia: News
 1830 Radio Tirana, Albania: News
 1830 Radio Yugoslavia: News
 1830 Swiss Radio Int'l: News
 1830 Voice of America: News (Special English)
 1847 Radio Jamahiriya, Libya: News
 1852 Radio RSA: News in Brief
 1855 KUSW: News [M-F]
 1900 BBC: News Summary
 1900 Christian Science Monitor: News
 1900 Deutsche Welle: World News
 1900 HCJB: Latin American News
 1900 Kol Israel: News
 1900 Radio Australia: World and Australian News
 1900 Radio Beijing: News
 1900 Radio Canada Int'l: News [M-F]
 1900 Radio Havana Cuba: International News [M-A]
 1900 Radio Japan: News
 1900 Radio Jordan: News Summary
 1900 Radio Moscow (World Service): News
 1900 Radio New Zealand Int'l: News
 1900 Radio Portugal: News [M-F]
 1900 Radio RSA: News
 1900 Radio Tanzania: News
 1900 Spanish National Radio: News
 1900 Voice of America: News

1900 WWCR: USA Radio News [M-F]
 1910 Radio Beijing: News About China
 1915 Radio Berlin Int'l: News
 1930 Christian Science Monitor: News [M-F]
 1930 Deutsche Welle: African News [M-F]
 1930 Radio Havana Cuba: Cuban Nat'l News [M-T]: Newsbreak [W-A]
 1930 Radio Korea: News
 1930 Radio Moscow (World Service): News In Brief
 1930 Radio Romania Int'l: News
 1935 Radiotelevisione Italiana: News
 1945 Radio Berlin Int'l: News
 1955 HCJB: World News
 1955 KUSW: News [M-A]
 2000 BBC: World News
 2000 Christian Science Monitor: News
 2000 KVOH: UPI News [S]
 2000 Radio Australia: International Report
 2000 Radio Beijing: News
 2000 Radio Havana Cuba: International News [M-A]
 2000 Radio Jordan: News Summary
 2000 Radio Moscow (World Service): News
 2000 Radio New Zealand Int'l: News
 2000 Radio Peace and Progress: News
 2000 Radio Polonia: News
 2000 Voice of America: News

2000 Voice of Indonesia: News
 2000 Voice of Turkey: News
 2005 Radio Pyongyang: News
 2010 Radio Beijing: News About China
 2025 Radio Havana Cuba: Cuban Nat'l News [M-A]
 2025 Radiotelevisione Italiana: News
 2030 Christian Science Monitor: News [M-F]
 2030 Radio Budapest: News
 2030 Radio Havana Cuba: News [M-A]
 2030 Radio Moscow (World Service): News In Brief
 2030 Radio Netherlands: News [M-A]
 2055 KUSW: News [M-A]
 2055 Voice of Indonesia: News in Brief
 2100 BBC: News Summary
 2100 Belize Radio One: News [M-F]
 2100 BRT, Brussels: News
 2100 Christian Science Monitor: News
 2100 Deutsche Welle: World News
 2100 KVOH: UPI News
 2100 Radio Australia: World and Australian News
 2100 Radio Beijing: News
 2100 Radio Berlin Int'l: News
 2100 Radio Canada Int'l: World at Six [M-F]: News [A-S]
 2100 Radio Finland: Northern Report [M-F]
 2100 Radio Japan: News

program

guide

1513 Radio Australia: Music of Radio Australia. See S 0513.
 1515 BBC: Music Review. See H 2315.
 1530 Radio Australia: Science File. See W 1130.
 1615 BBC: Science in Action. See M 0230.
 1623 Radio Canada Int'l: Current Affairs. See S 1623.
 1630 Radio Australia: Music of Radio Australia. See S 0513.
 1637 Radio Netherlands: Newsline. See S 0037.
 1645 BBC: The World Today. See M 1645.
 1645 Radio Australia: Sports Report. See S 1313.
 1652 Radio Netherlands: Airline Africa. Music, discussion with studio guests, and analysis of the issues that concern both Europe and Africa.
 2305 BBC: Commentary. See M 2305.
 2307 Voice of Turkey: Review of the Turkish Press. See S 0407.
 2308 Radio Canada Int'l (Caribbean): Current Affairs. See S 1623.
 2309 Voice of Turkey: Turkish Trade in Europe. The steps Turkey is taking to establish trade and labor ties with Europe.
 2310 BBC: Financial News. See M 2310.
 2313 Radio Australia: Music/Information. See S 0230.
 2315 BBC: Worldbrief. A roundup of the week's news headlines and human-interest happenings.
 2319 Voice of Turkey: From One Province to Another. A travel program, with the history of different Turkish locales.
 2326 Voice of Turkey: The Antalya Project. A look at the province of Antalya, in eastern Turkey.
 2330 BBC: Multitrack 3. Sarah Ward surveys the British contemporary music scene.
 2330 Radio Australia: At Your Request. See S 0130.
 2330 Radio Canada Int'l (USA): As It Happens. See M 2330.
 2333 Voice of Turkey: Music. See S 0415.

Saturday

June 2nd, 9th, 16th, 23rd

0030 BBC: From the Weeklies. A review of the weekly British press.
 0030 Radio Australia: Word of Mouth. See M 1545.
 0037 Radio Netherlands: Newsline. See S 0037.
 0045 BBC: Recording of the Week. See M 0545.
 0052 Radio Netherlands: Rembrandt Express. See F 0752.

0101 BBC: Outlook. See M 1405.
 0125 BBC: Financial News. See M 2310.
 0130 BBC: The Dancing Fiddles. Scottish and Irish tunes, as recorded live earlier this year (except June 16th, 23rd: Feature, programming on various subjects).
 0130 Radio Australia: Interaction. See T 1430.
 0145 BBC: Book Choice. See S 0745.
 0150 BBC: New Ideas. See T 0445.
 0204 Radio Canada Int'l: As It Happens. See M 2330.
 0209 BBC: British Press Review. See S 0209.
 0215 BBC: Network UK. See T 0215.
 0230 BBC: People and Politics. Background to the British political scene.
 0230 Radio Australia: This Australia. See M 0530.
 0313 Radio Australia: Music/Information. See S 0230.
 0315 BBC: The World Today. See M 1645.
 0330 BBC: The Vintage Chart Show. Paul Burnett presents top ten hits from the music charts of yesteryear.
 0337 Radio Netherlands: Newsline. See S 0037.
 0352 Radio Netherlands: Rembrandt Express. See F 0752.
 0407 Voice of Turkey: Review of the Turkish Press. See S 0407.
 0408 Radio Canada Int'l: As It Happens. See M 2330.
 0409 Voice of Turkey: Turkish Trade in Europe. See F 2309.
 0419 Voice of Turkey: From One Province to Another. See F 2319.
 0426 Voice of Turkey: The Antalya Project. See F 2326.
 0430 BBC: Here's Humph! See F 1345.
 0430 Radio Australia: Business Horizons. See T 1130.
 0433 Voice of Turkey: Music. See S 0415.
 0445 BBC: Worldbrief. See F 2315.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0513 Radio Australia: Music of Radio Australia. See S 0513.
 0530 BBC: Financial News. See M 2310.
 0530 Radio Australia: Arts Roundabout. Arts in Australia, past and present.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0630 BBC: Meridian. See W 0630.
 0630 Radio Australia: Just Out. See M 0030.
 0709 BBC: Twenty-Four Hours. See S 0509.
 0713 Radio Australia: Music of Radio Australia. See S 0513.
 0730 BBC: From the Weeklies. See F 2315.
 0730 Radio Australia: One World. See S 1130.
 0737 Radio Netherlands: Newsline. See S 0037.

newsline cont'd from p.63

2100 Radio Jordan: News Summary
 2100 Radio Moscow (World Service): News
 2100 Radio New Zealand Int'l: News
 2100 Radio Romania Int'l: News
 2100 Radio Yugoslavia: News
 2100 RAE, Buenos Aires: News
 2100 Spanish National Radio: News
 2100 Swiss Radio Int'l: News
 2100 Voice of America: News
 2110 Radio Beijing: News About China
 2130 Christian Science Monitor: News [M-F]
 2130 Kol Israel: News
 2130 KVOH: UPI Headlines [M-H]
 2130 Radio Canada Int'l (Africa): News
 2130 Radio Moscow (World Service): News in Brief
 2130 Swiss Radio Int'l: News
 2145 Radio Berlin Int'l: News
 2155 KUSW: News [M-F]
 2200 BBC: NewsHour
 2200 Christian Science Monitor: News
 2200 KVOH: UPI News
 2200 Radio Australia: International Report
 2200 Radio Beijing: News

2200 Radio Canada Int'l (Asia): News
 2200 Radio Canada Int'l (USA): World at Six [M-F]; News [A-S]
 2200 Radio Havana Cuba: International News [M-A]
 2200 Radio Moscow: News
 2200 Radiotelevisione Italiana: News
 2200 Voice of America: News
 2200 Voice of Free China: News and Commentary
 2200 Voice of Turkey: News
 2210 Radio Beijing: News About China
 2230 Christian Science Monitor: News [M-F]
 2230 KVOH: UPI Headlines [M-H]
 2230 Radio Havana Cuba: Cuban Nat'l News [M-A]
 2230 Radio Korea: News
 2230 Radio Moscow (World Service): News in Brief
 2230 Radio Polonia: News
 2230 Radio Tirana, Albania: News
 2230 Voice of America: News (Special English)
 2233 Radio Jamahiriya, Libya: News Headlines
 2255 KUSW: News [M-A]
 2300 BBC: World News[A-S]; 5-Minute News[M-F]
 2300 Belize Radio One: News [M-F]
 2300 Christian Science Monitor: News
 2300 Kol Israel: News
 2300 KVOH: UPI News
 2300 Radio Australia: World and Australian News

2300 Radio Canada Int'l (Caribbean): News
 2300 Radio Finland: Northern Report [T-A]
 2300 Radio for Peace Int'l: News [F]
 2300 Radio Japan: News
 2300 Radio Moscow: News
 2300 Voice of America: News
 2305 Radio Polonia: News
 2305 Radio Pyongyang: News
 2330 BRT, Brussels: News
 2330 Christian Science Monitor: News [M-F]
 2330 KVOH: UPI Headlines [A]
 2330 Radio Budapest: News
 2330 Radio Canada Int'l (USA): News [A-S]
 2330 Radio for Peace Int'l: News [M]
 2330 Radio Jamahiriya, Libya: News
 2330 Radio Kiev: News
 2330 Radio Moscow (World Service): News in Brief
 2330 Radio Tirana, Albania: News
 2335 Voice of Greece: News [S]
 2345 Radio Berlin Int'l: News
 2355 KUSW: News [M-A]
 2355 WRNO: ABC News [F]

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frequency

section

0000 UTC [8:00 PM EDT/5:00 PM PDT]

0000-0025	Radio Finland, Helsinki	11755	15185
0000-0030	M Radio Norway International, Oslo	15225	
0000-0030	BBC World Service, London, England	5965	5975 6005 6175
		6195	7145 7325 9580
		9590	9915 11750 11945
		11955	15260 15360 17875
		17830	12095
0000-0030	Kol Israel, Jerusalem	15640	9435 11605
0000-0030	Radio Berlin International, GDR	13690	11890 6080
0000-0030	Radio Korea, Seoul	15575	
0000-0030	Radio Canada International, Montreal	5960	9755 11905
0000-0045	Radio Yugoslavia, Belgrade	7215	11735 15105
0000-0050	Radio Pyongyang, North Korea	15115	15160
0000-0100	SLBC Domestic Service, Sri Lanka	4940	
0000-0100	Radio New Zealand, Wellington	17680	

the frequency file

June 1990

HERE WE GO AGAIN. Another month has passed and another thousand frequencies or so have changed in one way or another. Most of you are astute enough (being that you are *MT* readers) to realize that we just had yet ANOTHER seasonal changeover. Those changes, you will notice, are incorporated herein.

How did we do it? How did we get those changes in the magazine so quickly? We did it with the dedication of the entire *MT* staff, THAT's how we did it. From my own lowly self, to Rachel Baughn, to Larry Miller, and Bob Grove, we all work extra hard so that you have accurate information in your hands as quickly as possible. Remember that when it comes time to renew your subscription.

Anyhow, let's get back to the discussion of frequencies, and how you can be sure it's Station A that you're listening to. You realize, of course, that events can happen to really wreak havoc on your listening intentions. Let's take a look at some of them.

You're quite aware of the problem of interference. We get it from stations that show up on another station's frequency -- at the same time; from atmospheric conditions (e.g., lightning); and sometimes from the government (e.g., intentional jamming).

Okay, okay, you've heard it all before (pun intended) and you're wondering why I'm wasting space in this magazine just to be redundant. Well, those who know me well know that I am sometimes quite redundant. You must, in fact, become redundant if you are going to be comfortable in assessing your ability to distinguish what station you're listening to at any given time.

Whooooo, horsey, slow down there. Am I losing you? If so, good. If you understand what I've said so far, then you're not paying attention. Allow me to expand on that. If you listen to shortwave radio as much as I do, you begin to recognize the idiosyncratic differences associated with any given station. Day in to day out, the BBC announcers have a certain air about them. It's unmistakable. The same goes for Radio Moscow and the VOA.

But what about the other stations, which constitute the vast majority of the broadcasters out there? How are they to be recognized? Do you have to listen for hours on end for that elusive ID? Unfortunately, in most cases, yes. You weren't expecting that,

were you? Let's get this straight -- I will never mince words with you. Anyway, yes, to catch those exotic stations, you do have to listen carefully, but it can be made easier if you know what you're NOT listening to.

Now you're really confused. Let me put it this way: If you're looking for the Falkland Islands Broadcasting Service down on the tropical bands and you come upon a station with a British-sounding announcer, then you're stymied with the possibility of listening for several hours to catch that elusive ID, or, if you're the consummate SWL'er, you choose to eliminate it based on your observation of the fact that the announcer is a BBC announcer.

Based on your knowledge of the bands, you've saved yourself some time and disappointment - time that you can put to use by switching over to a real BBC frequency and listening to some good programming (that announcer you heard down in Falklands-land was probably a spurious image or some other trickster).

This may not be a good example, you say, because the FIBS people probably sound **VERY** British. Yes, but remember the programming structure of the BBC. Naturally, if something didn't check out (the programming wasn't parallel to any other BBC service), you may want to stick around for that ID.

In other words, the more you know, the more you hear, and the more you hear the more you enjoy, and the more you enjoy the more you need to use your resources like *MT*, and...wait a minute. See, I've come full circle, promoting *MT* again while cleverly making my point: You **MUST** be careful about what you're listening to. Don't send me a note saying that Station A is on 11925 kHz at 2330 just because you heard them announce this on the air. Check it out! See if they're actually there! Get involved, and pay attention to what you're listening to.

Granted, I've explored the issue of attentiveness here from the perspective of the DX'er as opposed to that of the SWL'er. You SWL'ers out there are probably organizing posses to lurch out from behind the door at me this October (barring unforeseen circumstances I will be there at the *MT* Convention). But fear not, this mindless rambling of mine can help you too.

Just think: You've just read an essay on how to improve your mind and your listening habits all at once, and you didn't have to buy a self-help book to do it. I've saved you some money.

-- Greg Jordan
Frequency Manager

0000-0100	Adventist World Radio, Costa Rica	9725	11870				7325	9580	9590	9915	
0000-0100	Radio Moscow N.American Service	11850	12040	11980	15315		11750	11955	15260	15360	
		15595	15580	13605	11710		12095				
		11780	15435				7310	9685	12050	17700	
0000-0100	Radio Moscow World Service	21690	21790	17890	17600	0030-0100	HCJB, Quito, Ecuador (alt. prog.)		15230		
		12055	11800	12045		0030-0100	Radio Netherlands Int'l, Hilversum		6020	6165	11740
0000-0100	Adventist World Radio-Asia, Guam	15125	15225			0035-0100	HCJB, Quito, Ecuador		9745	11795	15155
0000-0100	All India Radio, New Delhi	9535	9910			0050-0100	Vatican Radio, Vatican City		6150	9605	11780
		11715	11745	15110							
0000-0100	CBC Northern Quebec Service, Can	9625	(ML)								
0000-0100	CBN, St. John's, Nfld, Canada	6160									
0000-0100	CBU, Vancouver, British Columbia	6160									
0000-0100	CFCF, Montreal, Quebec, Canada	6005									
0000-0100	CFCN, Calgary, Alberta, Canada	6030									
0000-0100	CHNS, Halifax, Nova Scotia, Canada	6130									
0000-0100	Christian Science World Svc, Boston	9410	9850	13760	15435						
0000-0100	CKWX, Vancouver, British Columbia	6080									
0000-0100	CFRB, Toronto, Ontario, Canada	6070									
0000-0100	FEBC Radio Int'l, Philippines	15480									
0000-0100	KUSW, Salt Lake City, Utah	15580									
0000-0100	Radio Australia, Melbourne	15160	15240	15320	17630						
		17750	17795	21740							
0000-0100	Radio Beijing, Beijing, China	17705	15100	17855							
0000-0100	Radio Havana Cuba	11820									
0000-0100	Radio Luxembourg, Junglinster	6090									
0000-0100	Radio Tonga, Kingdom of Tonga	5030v									
0000-0100	Spanish National Radio, Madrid	9630	11880								
0000-0100	Voice of America-Americas Service	5995	9775	9815	11580						
		15205									
0000-0100	Voice of America-Caribbean Service	6130	9455	11695							
0000-0100	Voice of America-East Asia Service	7120	9770	11760	15185	0100-0145	Radio Berlin International, GDR		13690	11890	6080
		15290	17735	17820		0100-0150	Deutsche Welle, Koln, West Germany		6040	6145	9565
0000-0100	Radio for Peace Int'l, Costa Rica	7375	(+13660	21566	T-A)						
0000-0100	WHRI, Noblesville, Indiana	7315	9495								
0000-0100	WINB, Red Lion, Pennsylvania	15145									
0000-0100	WRNO Worldwide, Louisiana	7355									
0000-0100	WWCR, Nashville, Tennessee	7520									
0000-0100	WYFR, Okeechobee, Florida	5985	13695	15170							
S 0004-0015	Radio Nacional, Venezuela	5020	9540	11695	11850	0100-0200	Radio Moscow World Service		21690	21790	21525
0030-0035	Radio Prague, Czechoslovakia	6055	13715			0100-0200	M-F BBC (For China, Mongolia, Japan)		15280	21715	
0030-0045	BBC English by Radio, London, Eng	6195	7145	11945	15280	0100-0200	S,M Radio Canada International, Montreal		13720	11940	11845
		17875									
0030-0100	Radio Budapest, Hungary	6110	9520	9835	11910	0100-0200	Radio New Zealand, Wellington		17680		
		15160				0100-0200	SLBC Domestic Service, Sri Lanka		4940		
0030-0100	BBC World Service, London, England	5965	5975	6005	6175	0100-0200	CBN, St. John's, Nfld, Canada		6160		

LEGEND

- * The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.
- * In the space between the end time and the station name is the broadcast schedule.

S = Sunday M = Monday T = Tuesday W = Wednesday
H = Thursday F = Friday A = Saturday

If there is no entry, the broadcasts are heard daily. If, for example, there is an entry of "M," the broadcast would be heard only on Mondays. An entry of "M,W,F" would mean Mondays, Wednesdays and Fridays only. "M-F" would mean Mondays through Fridays. "TEN" indicates a tentative schedule and "TES" a test transmission.

The last entry on a line is the frequency. Several codes may be found after a frequency as follows:

- * SSB Indicates Single Sideband transmission.
- * v after a frequency indicates that it varies
- * Notations of USB and LSB (upper and lower sideband transmissions) usually refer only to the individual frequency after which they appear.
- * [ML] after a frequency indicates a multi-lingual transmission containing English-language programs. All other frequencies may be assumed to be English language programs directed to various parts of the world.
- * Listings followed by an asterisk (*) are for English lessons and do not contain regularly scheduled programming.

We suggest that you begin with the lower frequencies that a station is broadcasting on and work your way up the dial. Remember that there is no guarantee that a station will be audible on any given day. Reception conditions can change rapidly, though, and if it is not audible one night, it may well be on another.

HOW TO USE THE PROPAGATION CHARTS

Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location (they are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Useable Frequency [MUF] and the lower line the Lowest Useable Frequency [LUF] as indicated on the vertical axis of the graph.

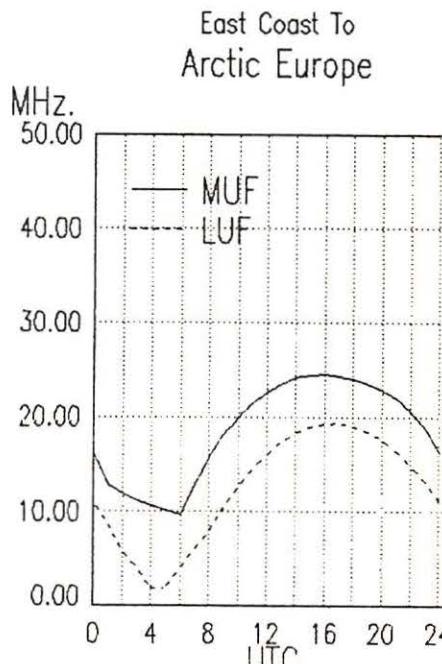
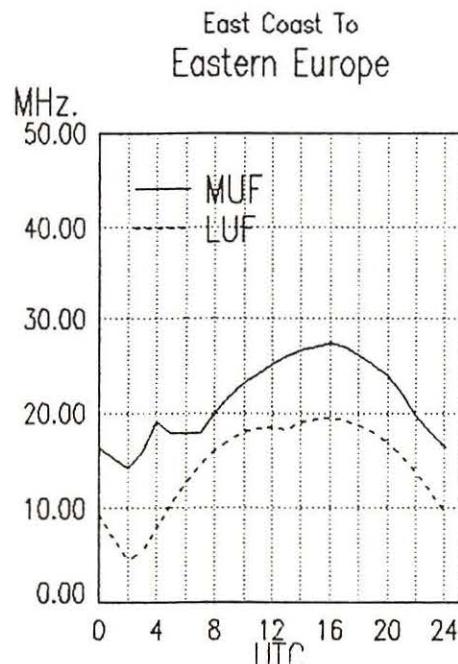
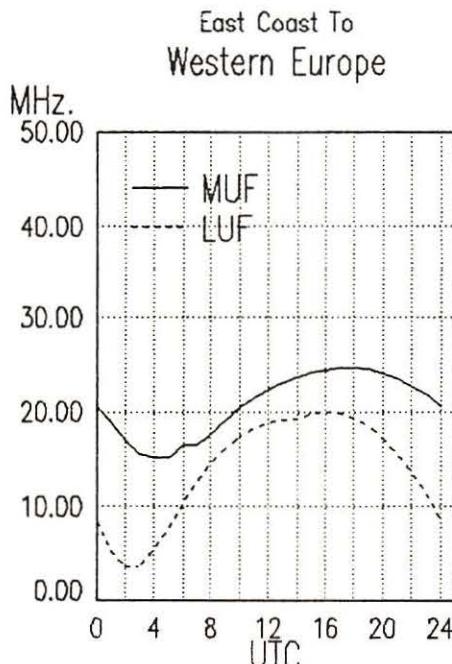
While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

frequency

section

0100-0200	CBU, Vancouver, British Columbia	6160	0200-0230	BBC Alternative Programming, London	9580	11955	15380
0100-0200	CFCF, Montreal, Quebec, Canada	6005	0200-0230	SLBC Domestic Service, Sri Lanka	4940		
0100-0200	CFCN, Calgary, Alberta, Canada	6030	0200-0230	BBC World Service, London, England	5975	6005	6050
0100-0200	CHNS, Halifax, Nova Scotia, Canada	6130			6175	7135	7325
0100-0200	Christian Science World Svc, Boston	15435	9850	13760	9410	9915	11750
0100-0200	CKWX, Vancouver, British Columbia	6080	0200-0230	M-F FEBC Radio Int'l, Philippines	15480	15360	15390
0100-0200	CFRB, Toronto, Ontario, Canada	6070	0200-0230	T-A Voice of America	5995	9775	9815
0100-0200	FEBC Radio Int'l, Philippines	15480	0200-0230	Swiss Radio International, Berne	15205		
0100-0200	HCJB, Quito, Ecuador	17875	15155	0200-0230	Radio Berlin International, GDR	6095	6135
0100-0200	KUSW, Salt Lake City, Utah	15580	0200-0230	Radio Klev, The Ukraine	12035	17730	15260
0100-0200	Radio Australia, Melbourne	17630	21525	15240	15320	11785	11890
		17600	17715	17750	17795	15180	13645
		21740				11790	15455
0100-0200	Radio Havana Cuba	11820	0200-0250	Deutsche Welle, Koln, W. Germany	11835	7285	9615
0100-0200	Radio Japan General Svc, Tokyo	17835	17810	17845	5960	15235	11945
0100-0200	Radio Luxembourg, Junglinster	6090	0200-0250	Radio Bras, Brasilia, Brasil	11745		
0100-0200	Radio for Peace Int'l, Costa Rica	7375	0200-0300	Adventist World Radio-Asia, Guam	13720		
0100-0200	Radio Tonga, Kingdom of Tonga	5030V	0200-0300	Radio Moscow North American Svc	11780	11980	12040
0100-0200	Spanish National Radio, Madrid	9630	0200-0300	15315	15595	15530	
0100-0200	Voice of America-Americas Service	5995	0200-0300	15425	11710	13605	
		9815	0200-0300	Radio Moscow World Service	21690	21790	17610
0100-0200	Voice of America-Caribbean Service	6130	0200-0300	17620	17560		
0100-0200	Voice of America-East Asia Service	7115	0200-0300	CBC Northern Quebec Service, Can	9625		
		7205	0200-0300	CBN, St. John's, Newfoundland, Can	6160		
0100-0200	Voice of Indonesia, Jakarta	15205	0200-0300	CBU, Vancouver, British Columbia	6160		
0100-0200	WHRI, Noblesville, Indiana	11755	0200-0300	CFCF, Montreal, Quebec, Canada	6005		
0100-0200	WINB, Red Lion, Pennsylvania	7315	0200-0300	CFCN, Calgary, Alberta, Canada	6030		
0100-0200	WRNO Worldwide, Louisiana	15145	0200-0300	CHNS, Halifax, Nova Scotia, Canada	6130		
0100-0200	WWCR, Nashville, Tennessee	7355	0200-0300	Christian Science World Svc, Boston	9455	9850	13760
0100-0200	WYFR, Okeechobee, Florida	7520	0200-0300	CKWX, Vancouver, British Columbia	6080		
0130-0200	M-A Voice of Greece, Athens	5985	0200-0300	CFRB, Toronto, Ontario, Canada	6070		
0130-0200	Radio Austria International, Vienna	11645	0200-0300	HCJB, Quito, Ecuador	9745	17875	15155
0145-0200	Radio Berlin International, GDR	9870	0200-0300	T-S KUSW, Salt Lake City, Utah	15580		
0145-0200	BBC Alternative Programming, London	6080	0200-0300	0200-0300	Radio Australia, Melbourne	17630	15240
0145-0200	BBC World Service, London, England	11785	0200-0300	17715	17750	15255	
		11890	0200-0300	15320			
		15125	0200-0300	11830			
0155-0200	Vatican Radio, Vatican City	7325	0200-0300	T-A Radio For Peace Int'l, Costa Rica	21566	7365	
		9915	0200-0300	0200-0300	Radio Canada International, Montreal	9535	9755
		11750	0200-0300	13720	11845	11940	
0200-0215	Vatican Radio, Vatican City	15105	0200-0300	Radio Romania Int'l, Bucharest	5990	9510	9570
0200-0220	Radio Veritas-Asia, Philippines	9645	0200-0300	11940	6155		
		11750	0200-0300	0200-0300	Radio Cairo, Egypt	9475	9675
		15360	0200-0300	0200-0300	Radio Havana Cuba	9710	11820
			0200-0300	0200-0300	Radio Luxembourg, Junglinster	6090	

0200 UTC [10:00 PM EDT/7:00 PM PDT]



MONITORING TIMES

June 1990

East Coast

frequency

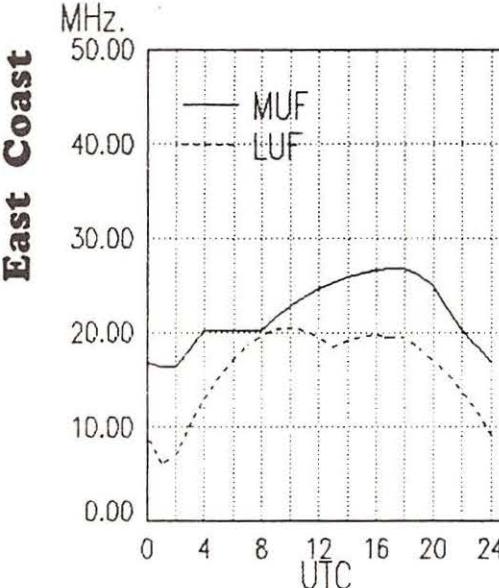
section

0200-0300	Radio Tonga, Kingdom of Tonga	5030v	0300-0357	Radio Prague, Czechoslovakia	5930	7345	9540	11680
0200-0300	Voice of America-South Asia Service	7115 7205 9740 11705 15250 21525	0300-0400	Radio New Zealand	11990	13715		
0200-0300	Voice of Free China, Taiwan	5950 7445 9680 11740 11860 15345	0300-0400	CBC, Northern Quebec Service, Can	17680			
0200-0300	WHRI, Noblesville, Indiana	7315 9495	0300-0400	Radio Moscow North American Svc	9625 (ML)			
0200-0300	WRNO Worldwide, Louisiana	7355	0300-0400	Radio Moscow World Service	15180	15595	15425	15580
0200-0300	WWCR, Nashville, Tennessee	7520	0300-0400	Radio Sofia, Bulgaria	13605			
0200-0300	WINB, Red Lion, Pennsylvania	15145	0300-0400	Voice of Turkey, Ankara	11615	11630	11780	11980
0200-0300	WYFR, Okeechobee, Florida	6065 9505 11720	0300-0400	CBN, St. John's, Newfoundland, Can	12040	11995	11705	15550
0211-0230	IRR Voice of the Democratic Alliance of Burma (clandestine: Thal/Burmese border)	7137v	0300-0400	CBC, Vancouver, British Columbia	15315	15230	17860	
0215-0225	Radio Nepal, Katmandu	5005 7165 (alt. 3230)	0300-0400	CFCF, Montreal, Quebec, Canada	15290	15310	11720	11765
0230-0300	BBC World Service, London, England	5975 6005 6050 6175 7135 7325 9915 11750 11955 12095 15260 15360 21715 9410	0300-0400	CFNC, Calgary, Alberta, Canada	11735	7255		
0230-0300	T-A Radio Portugal, Lisbon	9600 9680 9705 11840	0300-0400	CHNS, Halifax, Nova Scotia, Canada	9445	17880		
0230-0300	Radio Sweden, Stockholm	9695 11705	0300-0400	Christian Science World Svc, Boston	6160			
0230-0300	Radio Berlin International, GDR	9730 13610 15240	0300-0400	CKWX, Vancouver, British Columbia	6180			
0230-0300	Radio Tirana, Albania	9760 11825	0300-0400	CFRB, Toronto, Ontario, Canada	6005			
0245-0300	Voice of Eelam (clandestine: Tamil rebels in Sri Lanka)	7000	0300-0400	Faro del Caribe, San Jose, Costa Rica	6030			
0249-0257v	Radio Yerevan, Armenia	11790 13605 15180 15455	0300-0400	HCJB, Quito, Ecuador	6055			
			0300-0400	T-S KUSW, Salt Lake City, Utah	17875	15155		
			0300-0400	Radio 5, Johannesburg, South Africa	9815			
			0300-0400	Radio Australia, Melbourne	4880			
			0300-0400		17630	17600	15240	15320
			0300-0400		17715	17750	17795	21740
			0300-0400		21525	15560		
			0300-0400	Radio Cultural, Guatemala	3300			
			0300-0400	Radio Havana Cuba	9710	11820		
			0300-0400	Radio Oranje, South Africa	3215			
			0300-0400	Trans World Radio, Bonaire	9535	11930		
			0300-0400	Voice of America-Africa Service	6035	7280	9525	9575
			0300-0400	Voice of Free China, Taiwan	11835			
			0300-0400	WHRI, Noblesville, Indiana	5950	7445	9680	9765
			0300-0400	WRNO Worldwide, Louisiana	11745	15345		
			0300-0400	WWCR, Nashville, Tennessee	7315	9495		
			0310-0325	WYFR, Okeechobee, Florida	6185			
			0310-0327	Vatican Radio, Vatican City	7520			
			0315-0330	Red Cross Broadcasting, Switzerland	6065	9505	15440	
			0315-0330	Tuesday and Friday after last Sunday of the month.	9055			
			0315-0330	Radio for Peace Int'l, Costa Rica	11725	9725	9885	12035
			0315-0330	BBC World Service, London, England	6135			
			0315-0330	7375 USB	3255	5975	6005	6050
			0315-0330	Radio Australia, Melbourne	6175	6190	6195	7135

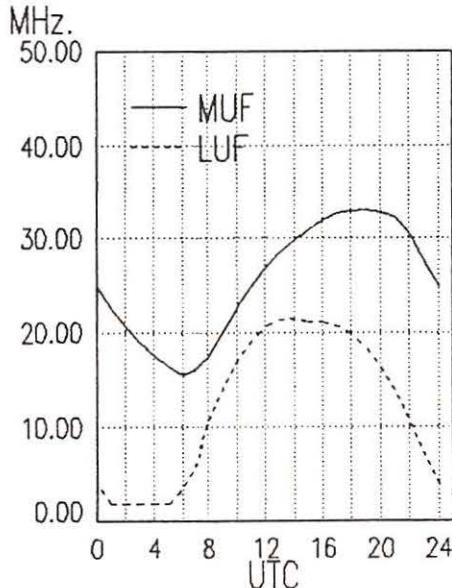
0300 UTC [11:00 PM EDT/8:00 PM PDT]

0300-0315	Azad Kashmir Radio, Pakistan	7286 4980 3665	0300-0400	Radio Cultural, Guatemala	3300			
0300-0315	Radio Berlin International, GDR	13610 9730 15240	0300-0400	Radio Havana Cuba	9710	11820		
0300-0315	BBC English by Radio, London	11730 11740 15420	0300-0400	Radio Oranje, South Africa	3215			
0300-0315	BBC World Service, London, England	3255 5975 6005 6050 6175 6190 6195 7135 7325 9410 9600 9670 9915 11750 11760 11845 11955 12095 15220 15260 15310 15420 17705 21715	0300-0400	Trans World Radio, Bonaire	9535	11930		
0300-0330	Radio Cairo, Egypt	9475 9675	0300-0400	Voice of America-Africa Service	6035	7280	9525	9575
0300-0330	Radio Japan General Service, Tokyo	17835 17810 17765 9845	0300-0400	Voice of Free China, Taiwan	11835			
0300-0330	Radio Japan Americas Svc, Tokyo	15195 17825 15325 21610	0300-0400	WHRI, Noblesville, Indiana	5950	7445	9680	9765
0300-0345	Radio Berlin International, GDR	11785 15125	0300-0400	WRNO Worldwide, Louisiana	11745	15345		
0300-0350	Radio Baghdad, Iraq	11830	0300-0400	WWCR, Nashville, Tennessee	7315	9495		
0300-0350	Deutsche Welle, Kolin, West Germany	6085 6120 9545 15205 11810	0310-0325	WYFR, Okeechobee, Florida	6185			
0300-0355	Radio Beijing, China	9690 17855 11715 15100	0310-0327	Vatican Radio, Vatican City	7520			
			0315-0330	Red Cross Broadcasting, Switzerland	6135	9725	9885	12035
			0315-0330	Tuesday and Friday after last Sunday of the month.	6065	9505	15440	
			0315-0330	Radio for Peace Int'l, Costa Rica	9055			
			0315-0330	BBC World Service, London, England	7375 USB			

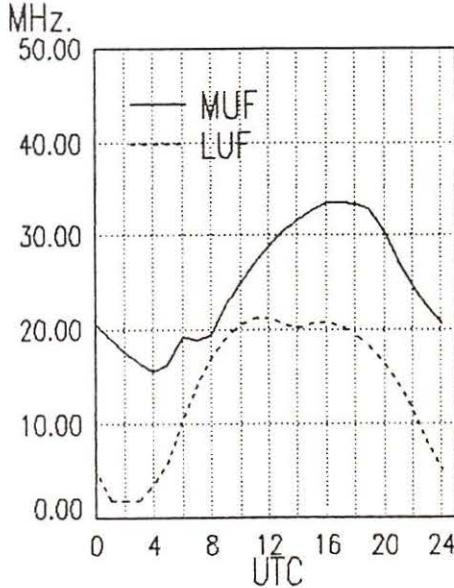
East Coast To
Middle East



East Coast To
West Africa



East Coast To
Central Africa

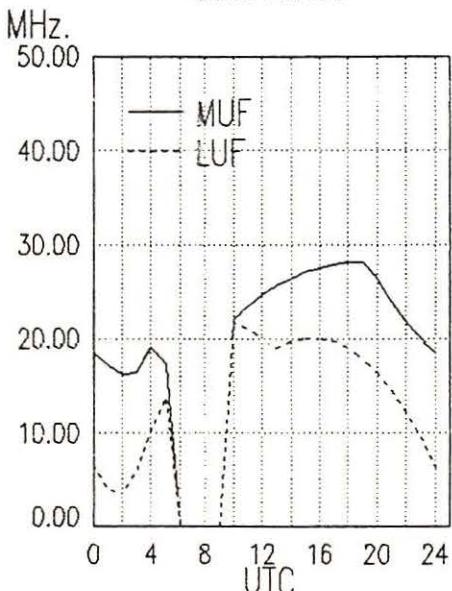


frequency

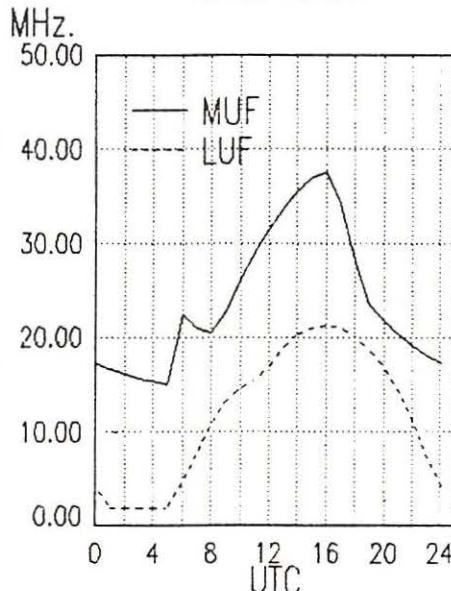
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0315-0345	Radio France International, Paris	7325 9410 9600 9670 9915 11750 11760 11845 11955 12095 15220 15260 15310 17705 21715	0400-0430	Voice of America-Africa Service	6035 7280 9525 9575 11835 11785 6025
0330-0340	All India Radio, New Delhi	3905 4860 9610 11830 7280 15135 9745 9790 9800 11705 11995	0400-0450	Deutsche Welle, Keln, West Germany	7225 7150 9765 9565 11765 15265
0330-0400	BBC Alternative Programming, London	3255 6005 6190 9600 11730 11845 15420	0400-0450	Radio Pyongyang, North Korea	13650 15180 17765
0330-0400	BBC World Service, London, England	5975 6175 6195 9410 9670 9915 11760 11955 12095 15310	0400-0455	Radio Beijing, China	11685 11840
0330-0400	Radio Netherlands Int'l, Hilversum	9590 6165	0400-0500	Radio Moscow North American Svc	15180 15595 15425 15455 13605
0330-0400	Radio Tirana, Albania	9760 11825	0400-0500	Radio Moscow World Service	11615 11630 11780 12040
0330-0400	United Arab Emirates Radio, Dubai	11940 15400 15435 21675	0400-0500	Radio New Zealand	11980 15540 15530 15315 11995 15280 17890 11850
0330-0400	Radio Japan General Service, Tokyo	17835 17810 17765	0400-0500	CBC, Northern Quebec Service	9625 (ML)
0340-0350	M-A Voice of Greece, Athens	11645 9395 9420	0400-0500	Radio for Peace Int., Costa Rica	7375 USB
0345-0400	Radio Berlin International, GDR	11785 13690 15125	0400-0500	CBN, St. John's, Newfoundland, Can	6160
0350-0400	RAI, Rome, Italy	11905 15330 17795 17690 17665	0400-0500	CBU, Vancouver, British Columbia	6160
0400 UTC [12:00 AM EDT/9:00 PM PDT]					
0400-0410	M-F Radio Zambia, Lusaka	4910	0400-0500	CFCF, Montreal, Quebec, Canada	6005
0400-0410	RAI, Rome, Italy	11905 15330 17795	0400-0500	CFCN, Calgary, Alberta, Canada	6030
0400-0415	Kol Israel, Jerusalem	17630 11655 15640 9435 11605 12077	0400-0500	CHNS, Halifax, Nova Scotia, Canada	6130
0400-0425	Radio Cultural, Guatemala	3300	0400-0500	Christian Science World Svc, Boston	9455 9840 13760 17780
0400-0425	Radio Netherlands Int'l, Hilversum	9590 6165	0400-0500	CKWX, Vancouver, British Columbia	6080
0400-0430	BBC World Service, London, England	3255 3955 5975 6005 6175 6180 6190 6195 7105 9410 9600 9610 9670 9915 11760 11955 12095 15070 15245 15280 15310 15420 17885 21715 9580	0400-0500	CFRB, Toronto, Ontario, Canada	6070
0400-0430	Radio Romania Int'l, Bucharest	5990 9510 9570 11830 11940 6155	0400-0500	HCJB, Quito, Ecuador	17875 15155
0400-0430	Swiss Radio International, Berne	6135 9725 9985 12035	0400-0500	KUSW, Salt Lake City, Utah	9815
0400-0430	Trans World Radio, Bonaire	11930 9535	0400-0500	Radio 5, Johannesburg, South Africa	4880
0400-0430	Radio Berlin International, GDR	11785 13690 15125	0400-0500	Radio Australia, Melbourne	21252 21740 17600 15240 15320 17715 17795 17750
0400-0500	TP	Voice of Hope via KFBS, Guam	0400-0500	Radio Beijing, China	11695 15560 15195 15160
0400-0500	TP	Radio Canada International	0400-0500	Radio Havana Cuba	9750 9710 11760 11820
0400-0500	TP	Radio Oranje, South Africa	0400-0500	Radio Oranje, South Africa	3215
0400-0500	TP	M-A WMLK Bethel, Pennsylvania	0400-0500	M-A WMLK Bethel, Pennsylvania	9465
0400-0500	TP	Radio Tonga, Kingdom of Tonga	0400-0500	Radio Tonga, Kingdom of Tonga	5030v
0400-0500	TP	Voice of America-Middle East Service	0400-0500	Voice of America-Middle East Service	3980 5995 6040 6140 7170 7200 11785 15205
0400-0500	TP	Voice of Hope via KFBS, Guam	0400-0500	Radio Canada International	15225 15275
0400-0500	TP	Radio Havana Cuba	0400-0500	WHRI, Noblesville, Indiana	7315 9495
0400-0500	TP	WRNO Worldwide, Louisiana	0400-0500	WRNO Worldwide, Louisiana	6185
0400-0500	TP	WWCR, Nashville, Tennessee	0400-0500	WWCR, Nashville, Tennessee	7520
0400-0500	TP	WYFR, Okeechobee, Florida	0400-0500	WYFR, Okeechobee, Florida	6065 9505
0425-0440	TP	RAI, Rome, Italy	0425-0440	RAI, Rome, Italy	5990 7275
0430-0500	TP	BBC Alternative Programming, London	0430-0500	BBC Alternative Programming, London	6005 6190 9600 11940 15400 15420

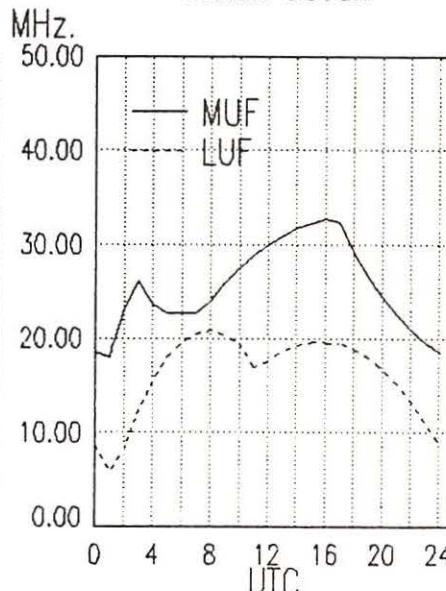
East Coast To East Africa



East Coast To South Africa



East Coast To Indian Ocean



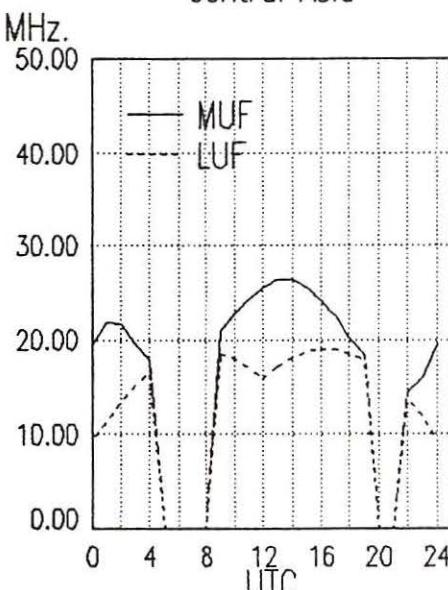
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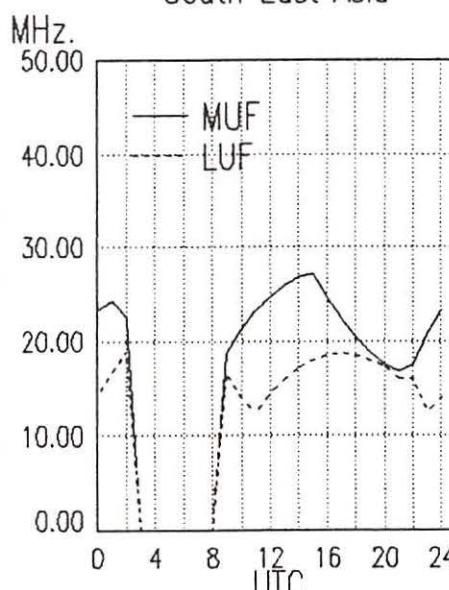
0430-0500	BBC World Service, London, England	3955 5975 6180 6195 9410 9915 12095 15070 15245 15280 15310 21715 7120	0500-0600	Radio Moscow North American Svc 15595 13605 12050 15455 17765
0430-0500	Radio for Peace Int'l, Costa Rica	7375 13665	0500-0600	Radio Moscow World Service 11615 11630 11980 11995 15320 15280 17655 17620 12010
0430-0500	Radio Tirana, Albania	9500 11835	0500-0600	Radio New Zealand, Wellington 17680
0430-0500	Voice of America-Africa Service	6035 7280 9525 9575	0500-0600	CKWX, Vancouver, British Columbia 6080
0445-0500	Radio Berlin International, GDR	11785	0500-0600	CFRB, Toronto, Ontario, Canada 6070
0455-0500	Voice of Nigeria, Lagos	7255	0500-0600	HCJB, Quito, Ecuador 15155 17875
			0500-0600	T-S KUSW, Salt Lake City, Utah 6175
			0500-0600	Radio Australia, Melbourne 17600 21740 15240 15560 15160 17750 17795
0500 UTC [1:00 AM EDT/10:00 PM PDT]			0500-0600	Radio Havana Cuba 9710 11760 11820 9750
0500-0505	Radio Oranje, South Africa	3215 17630	0500-0600	Radio Japan General Service, Tokyo 17765 17810 17825 17890 15195
0500-0515	M-F Radio Canada International, Montreal	6050 6150 7295 9750 11775 17840	0500-0600	Radio for Peace Int'l, Costa Rica 7375 USB
0500-0515	Azad Kashmir Radio, Pakistan	7268 4980 3665	0500-0600	Radio Tonga, Kingdom of Tonga 5030v
0500-0520	Radio 5, Johannesburg, South Africa	4880	0500-0600	Spanish National Radio, Madrid 9630
0500-0530	Vatican Radio African Service	17710 17730 21650	0500-0600	Voice of America-Africa Service 9575
0500-0530	Radio Berlin International, GDR	11785	0500-0600	Voice of America-Middle East Service 3980 5995 6040 6060
0500-0530	Voice of America-Middle East Service	5995 6060 6140 7170 7200 9670 9700 9740	0500-0600	Voice of Hope via KFBS, Guam 15225
		11925 15205	0500-0600	Voice of Nigeria, Lagos 7255
0500-0545	Radio Berlin International, GDR	5965 6115 9645 13610 9760	0500-0600	WHRI, Noblesville, Indiana 7315 9495
0500-0545	BBC World Service, London, England	3955 5975 6005 6180 6190 6195 7120 7230	0500-0600	WWCR, Nashville, Tennessee 7520
		9410 9580 9600 9640	0500-0600	WYFR, Okeechobee, Florida 5985 11580 17640 15566
		11760 11940 12095 15070	0510-0600	Radio Oranje, South Africa 7285
		15245 15280 15310 15400	0515-0600	Radio Berlin International, GDR 15240 17880
		15420 17885 21470 21715	0525-0600	Radio 5, Johannesburg, South Africa 11885
		9915	0530-0545	BBC English by Radio, London 6050 6150 7210 9750
0500-0550	Deutsche Welle, Koln, West Germany	5960 6120 9670 11705 11845 6180	0530-0600	Radio Austria International, Vienna 6015
0500-0555	Radio Beijing, China	11840	0530-0600	Radio Romania Int'l, Bucharest 15380 17720 17745
0500-0600	Radio Kuwait	15345	0530-0600	UAE Radio Dubai 15435 17830 21700
0500-0600	CBU, Vancouver, British Columbia	6160	0545-0600	BBC World Service, London, England 3955 5975 6180 6190
0500-0600	Radio Jordan, Amman	13655		6195 7120 7230 9410
0500-0600	CFCF, Montreal, Quebec, Canada	6005		9580 9600 9640 11760
0500-0600	CFCN, Calgary, Alberta, Canada	6030		11940 12095 15070 15245
0500-0600	CHNS, Halifax, Nova Scotia, Canada	6130		15280 15310 15400 15420
0500-0600	M-AWMLK Bethel, Pennsylvania	9465	0555-0600	17885 21470 21715
0500-0600	Christian Science World Svc, Boston	9455 9840 13760 17780	0555-0600	Voice of Malaysia, Kuala Lumpur 6175 9750 15295
			0600 UTC [2:00 AM EDT/11:00 PM PDT]	

East Coast To
Central Asia

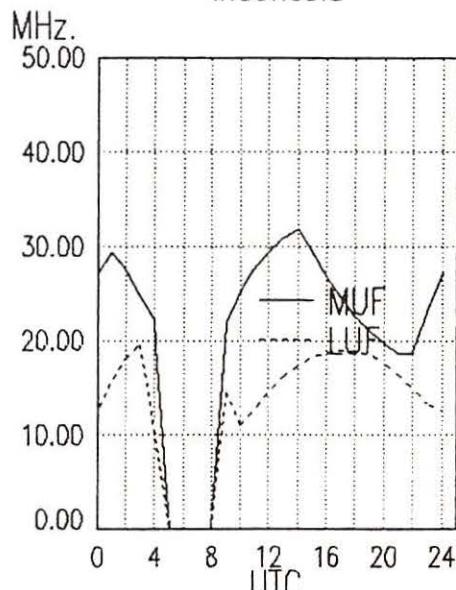
East Coast



East Coast To
South East Asia



East Coast To
Indonesia



frequency

section

0600 UTC [2:00 AM EDT/11:00 PM PDT]

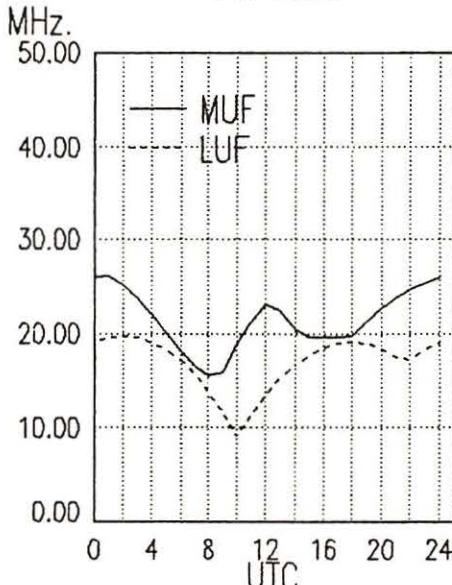
0610-0615	Sierra Leone Brdcstng.Svc., Freetown	3316
0600-0630	Radio Australia, Melbourne	17600 21740 15240 21525 17715
0600-0630	BBC World Service, London, England	3955 5975 6180 6190 6195 7120 7150 7230 9410 9580 9600 9640 11760 11940 11955 12095 15070 15245 15280 15310 15360 15400 15420 17640 17710 17740 17790 17885 21470 21715
0600-0630	Laotian National Radio	7116V
0600-0630	S Radio Norway International, Oslo	5990 15165
0600-0645v	Radio For Peace, Int., Costa Rica	7375 USB
0600-0650	Deutsche Welle, Köln, W. Germany	11765 13790 15185 17875
0600-0650	CBU, Vancouver, British Columbia	6160
0600-0700	Radio Pyongyang, North Korea	15180 13650
0600-0700	CFCF, Montreal, Quebec, Canada	6005
0600-0700	SIBC Solomon Islands	9545 5020
0600-0700	Radio New Zealand, Wellington	17680
0600-0700	Radio 5, South Africa	11885 6065
0600-0700	WYFR, Okeechobee, Florida	15566 17640 5985 6065 7355
0600-0700	ABC Domestic Network, Australia	15425
0600-0700	M-AWMLK Bethel, Pennsylvania	9465
0600-0700	CFCN, Calgary, Alberta, Canada	6030
0600-0700	CHNS, Halifax, Nova Scotia, Canada	6130
0600-0700	Christian Science World Svc, Boston	9455 9840 11980 17780 17855
0600-0700	CKWX, Vancouver, British Columbia	6080
0600-0700	CFRB, Toronto, Ontario, Canada	6070
0600-0700	Radio Moscow North American Svc.	17605 13605 15595 12050 15180 15425
0600-0700	Radio Moscow World Service	11950 12010 15455 11995 15475 17570 17600 17655 15560 15595
0600-0700	Voice of the Mediterranean, Malta	9765
0600-0700	HCJB, Quito, Ecuador	15155 17875
0600-0700	KUSW, Salt Lake City, Utah	6175
0600-0700	Radio Jordan, Amman	13655
0600-0700	Radio Tonga, Kingdom of Tonga	5030v

0600-0700	Voice of America-Africa Service	3990 6035 6080 6125 7280 9530 9540 9575 11915
0600-0700	Voice of America-Middle East Serv	3980 5965 5995 6060 6095 6140 7170 7200 7325 9715 11785 11805 11925 15195 15205
0600-0700	Radio Havana Cuba	7310
0600-0700	WHRI, South Bend, Indiana	9495
0600-0700	Voice of Hope, Lebanon	6280
0600-0700	TP Voice of Hope via KFBS, Guam	15225
0600-0700	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
0600-0700	Radio Korea, Seoul	7275
0630-0700	Radio Sofia, Bulgaria	11720 15160 17820
0630-0700	Radio Finland, Helsinki	11755 9560 6120
0630-0700	Vatican Radio African Service	17710 17730 21650
0630-0700	BRT, Brussels, Belgium	13675 11695
0630-0700	Radio Australia, Melbourne	21740 15240 17715 17600
0630-0700	Radio Tirana, Albania	9500 7205
0630-0700	BBC Alternative Prog, London	9600 11940 15400 17740
0630-0700	BBC World Service, London, England	3955 5975 6180 6190 6195 7120 7150 7230 9410 9580 9640 11760 11955 12095 15070 15245 15280 15310 15360 15420 17640 17710 17885 17790 21470 21715
0630-0700	Radio Polonia, Warsaw, Poland	6135 7270 15120 9675
0630-0700	Swiss Radio International, Berne	12030 15430 17570 21520
0645-0700	BBC English by Radio, London	5875 7260 11945
0645-0700 A	Radio for Peace Int., Costa Rica	7375 USB
0645-0700	GBC Radio, Accra, Ghana	6130
0645-0700	HCJB, Quito, Ecuador	9610 11835 (alt 6050)
0645-0700	Radio Romania Int'l, Bucharest	21550 11940 15335 17720 17805 15250 9760 11840

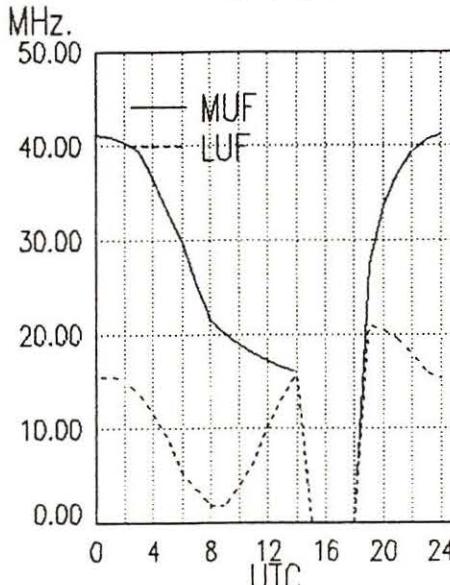
0700 UTC [3:00 AM EDT/12:00 AM PDT]

0700-0710	Sierra Leone Brdcstng.Svc., Freetown	3316
0700-0715	Radio Bucharest, Romania	21550 11940 15335 17720 17805 15250
0700-0715	Radio New Zealand	17680
0700-0725	BRT Brussels, Belgium	21815 11695 6035

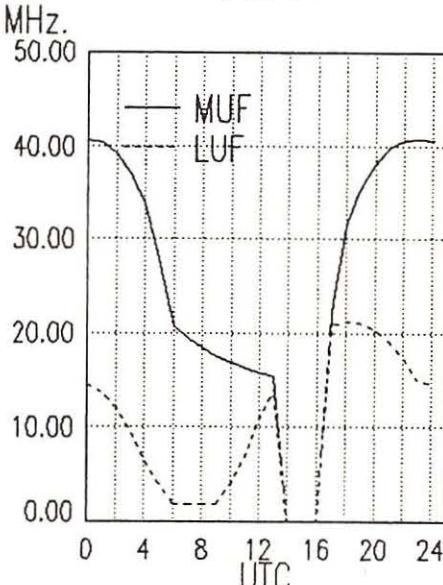
East Coast To Far East



East Coast To Australia



East Coast To Pacific



East Coast

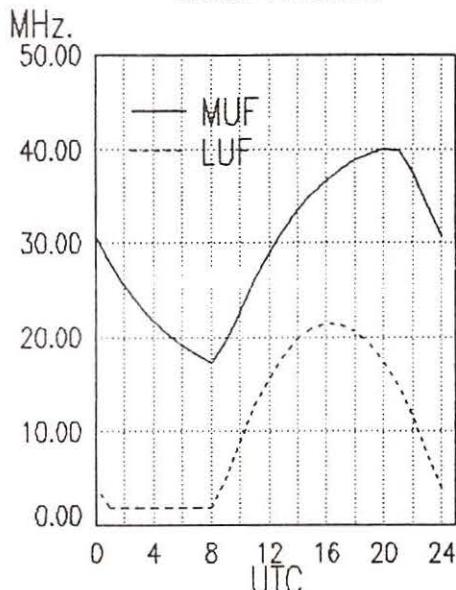
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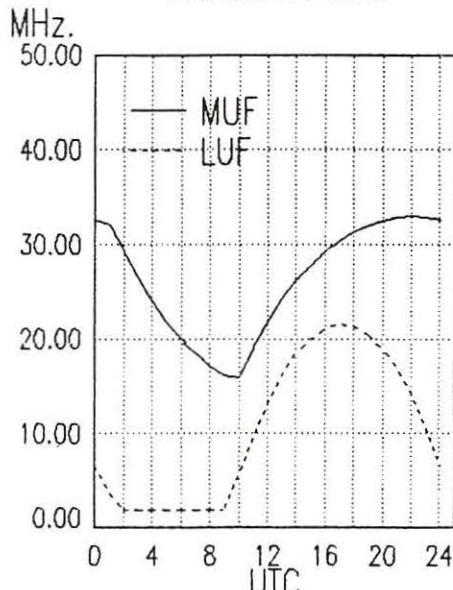
0700-0730	Radio Australia, Melbourne	21740 9655 21525 15160	0715-0730	Vatican Radio, Vatican City	15190 17730
		17600 17715 15240 17630	0715-0800	S FEBA, Mahe, Seychelles	15275 17820
		11880 15465 13700	0730-0733	Radio Prague, Czechoslovakia	9505 7345 6055
0700-0730	BBC World Service, London, England	3955 5975 6180 6190	0730-0745	BBC English by Radio, London	3975 6010 7210 9825
		6195 7120 7150 7230	0730-0800	ABC, Alice Springs, Australia	2310 (ML)
		7325 9410 9580 9600	0730-0800	ABC, Katherine, Australia	2485
		9640 11760 11940 11955	0730-0800	ABC, Tennant Creek, Australia	2325 (ML)
		12095 15070 15245 15280	0730-0800	Radio Australia, Melbourne	15240 17715 17600 15160
		15310 15360 15420 17640	0730-0800		9655 17630
		17710 17740 17885 17790	0730-0800	Radio Austria Int'l, Vienna	21490 15410 13730 6155
		21470 21660 21715 9760	0730-0800	BBC Alternative Programming, London	9600 11860 15105
0700-0730	Radio Tirana, Albania	11835 9500	0730-0800	BBC World Service, London, England	5975 6190 7150 7325
0700-0750	Radio Pyongyang, North Korea	15340 11335			9410 9640 11760 11940
0700-0800	A Radio for Peace Int'l, Costa Rica	7375 USB			11955 12095 15070 15280
0700-0800	Voice of Hope, Lebanon	6280			15310 15360 15420 17640
0700-0800	CBU, Vancouver, British Columbia	6160			17710 17740 17790 21660
0700-0800	TWR Monte Carlo	9480			21715 15400
0700-0800	Radio Havana Cuba	11835	0730-0800	M-F BBC World Service, London, England	6180 17885 21470 15245
0700-0800	WYFR, Okeechobee, Florida	15566 7355 6065 13720	0730-0800	Radio Netherlands, Hilversum	9630 9715
0700-0800	ZBC-1, Zimbabwe	7283	0730-0800	Swiss Radio Int'l European Service	3985 6165 9535
0700-0800	Solomon Islands Broadcasting Co.	5020 9545	0745-0800	Radio Berlin International, GDR	6040 6115 7185 9730
0700-0800	Voice of Free China, Taiwan	5950			
0700-0800	United Nations Radio via Italian Radio Relay Service, Milan, Italy	9860			
0700-0800	WHRI Noblesville, Indiana	9595			
0700-0800	ABC Brisbane, Australia	9660			
0700-0800	CFCF, Montreal, Quebec, Canada	6005			
0700-0800	CFCN, Calgary, Alberta, Canada	6030			
0700-0800	CHNS, Halifax, Nova Scotia, Canada	6130			
0700-0800	Christian Science World Svc, Boston	9455 9840 11980 17780			
		17855			
0700-0800	Radio Moscow World Service	11950	0800-0810	Sierra Leone Brdcstng Co., Freetown	3316
0700-0800	CKWX, Vancouver, British Columbia	6080	0800-0825	BRT Brussels, Belgium	9925
0700-0800	CFRB, Toronto, Ontario, Canada	6070	0800-0825	Radio Netherlands Int'l, Hilversum	9630 9715
0700-0800	GBC Radio, Accra, Ghana	6130	0800-0825	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
0700-0800	HCJB, Quito, Ecuador	9610 11835 (alt. 6050)	0800-0825	Radio Finland, Helsinki	17800 21550
0700-0800	KNLS, Anchor Point, Alaska	9785	0800-0830	S Radio Norway International, Oslo	15165 25730
0700-0800	Radio Japan, Tokyo	21500 17765 17810 17890	0800-0830	Radio Australia, Melbourne	17600 9655 21525 9580
		21690			17715 15240 15160 13700
0700-0800	Radio Jordan, Amman	13655	0800-0830	Voice of Islam, Dhaka, Bangladesh	15195 11705
0700-0800	Radio Tonga, Kingdom of Tonga	5030v	0800-0850	Radio Pyongyang, North Korea	15180 15160 11830
0700-0800	TP Voice of Hope via KFBS, Guam	15225	0800-0900	Radio New Zealand, Wellington	17630
0700-0800	Voice of Malaysia, Kuala Lumpur	6175 9750 15295	0800-0900	Radio Moscow World Service	21690 21790
0710-0800	HCJB, Quito, Ecuador (S. Pacific Sv.)	6130 9745 11925	0800-0900	Trans World Radio, Monte Carlo	9480
0715-0730	BBC English by Radio, London	11860 15105	0800-0900	ABC Brisbane, Australia	9660
			0800-0900	BBC, London	15280 9640 12095 15070
			0800-0900	ABC, Alice Springs, Australia	15360 21715 15400 9410
			0800-0900	ABC, Katherine, Australia	21660
			0800-0900	ABC, Perth, Australia	2310 (ML)
			0800-0900		2485
			0800-0900		15425

East Coast To
South America

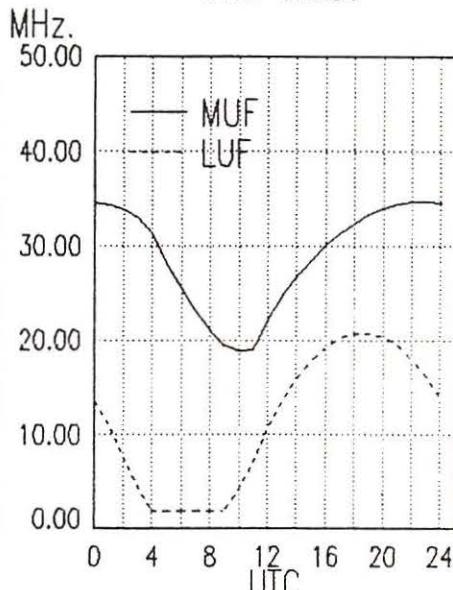
East Coast



East Coast To
Central America



East Coast To
West Coast

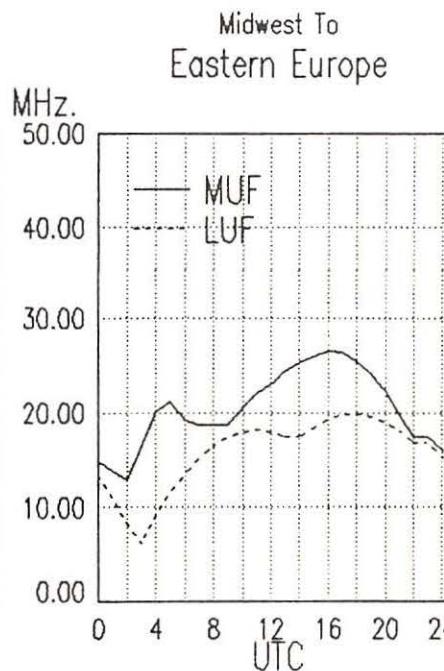
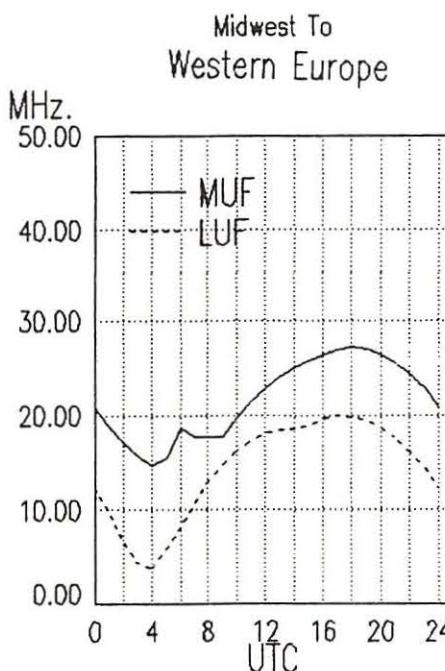
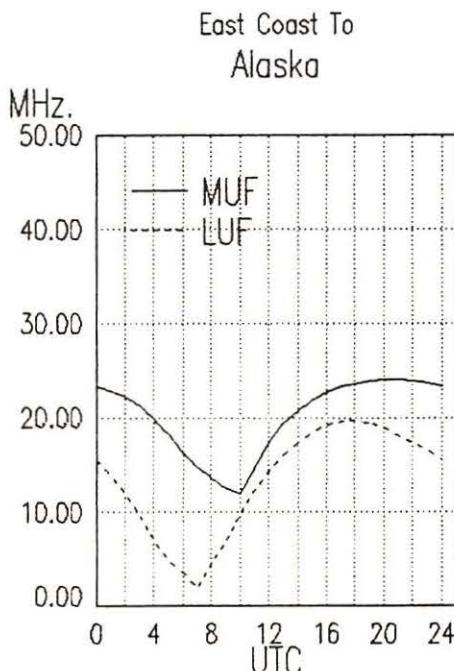


frequency

section

0800-0900	ABC, Tennant Creek, Australia	2325 (ML)
0800-0900	A Radio for Peace Int., Costa Rica	7375 USB
0800-0900	Voice of Hope, Lebanon	6280
0800-0900	CBN, St. John's, Newfoundland, Can	6160
0800-0900	CBU, Vancouver, British Columbia	6160
0800-0900	CFCF, Montreal, Quebec, Canada	6005
0800-0900	CFCN, Calgary, Alberta, Canada	6030
0800-0900	CHNS, Halifax, Nova Scotia, Canada	6130
0800-0900	Christian Science World Svc, Boston	9455 17855 9840 9530 13760
0800-0900	CKWX, Vancouver, British Columbia	6080
0800-0900	CFRB, Toronto, Ontario, Canada	6070
0800-0900	HCJB, Quito, Ecuador(alt.S.Pac.Svc.)	6130
0800-0900	HCJB, Quito, Ecuador(S.Pacific Sv)	9745 11925 15285
0800-0900	KNLS, Anchor Point, Alaska	11715
0800-0900	Solomon Islands Broadcasting Co.	5020
0800-0900	WHRI, South Bend, Indiana	7355
0800-0900	KTWR, Agana, Guam	15200
0800-0900	KUSW, Salt Lake City, Utah	6135
0800-0900	Radio Jordan, Amman	13655
0800-0900	Radio Tonga, Kingdom of Tonga	5030v
0800-0900	Voice of Indonesia, Jakarta	11755 11788
0800-0900	Voice of Nigeria, Lagos	7255
0800-0900	S WRNO Worldwide, Louisiana	6185
0810-0820	Bayerischer Rundfunk, Munich	6085
0830-0900	Radio Australia, Melbourne	15240 17750 17715 17600 11930 11720 9655 9580 15160 5995
0830-0833	Radio Prague, Czechoslovakia	9505 7345 6055
0830-0855	M-A Radio Netherlands Int'l, Hilversum	17575 21485 9770
0830-0900	Radio Beijing, China	11755 15440 17710
0830-0900	Radio Netherlands Int'l, Hilversum	17575 21485
0830-0900	Radio Finland, Helsinki	21550 17800
0830-0900	Swiss Radio International, Berne	9560 13685 17670 21695
0845-0900	KTWR, Agana, Guam	15210
0850-0900	All India Radio, New Delhi	5960 5990 6010 6020 6050 6065 6100 6140 7110 7140 7150 7160 7250 7280 7295 9610 11850 15235 15250 17705

0900 UTC [5:00 AM EDT/2:00 AM PDT]				
0900-0910	KTWR, Agana, Guam	11805		
0900-0915	Radio Budapest, Hungary	15160 15220 11925 9835 9585 6110		
0900-0920	ABC, Perth, Australia	15425		
0900-0925	BRT Brussels, Belgium	21810 26050		
0900-0925	Radio Netherlands Int'l, Hilversum	17575 21485		
0900-0930	Radio Australia, Melbourne	9580 9655 9760 11720 15415 17715 11930 6020 15160 15240 5995		
0900-0930	Radio Beijing, China	11755 15440 17710		
0900-0930	S Radio Norway International, Oslo	25730		
0900-0945	Radio Berlin International, GDR	11890		
0900-0950	Deutsche Welle, Koln, West Germany	6160 9565 15410 11740 17780 17820 21600 21650 21680		
0900-1000	ABC, Alice Springs, Australia	2310 (ML)		
0900-1000	ABC Brisbane, Australia	9660		
0900-1000	Solomon Islands Broadcasting Co.	5020		
0900-1000	Radio Moscow World Service	21690 21660 21725 15580		
0900-1000	ABC, Katherine, Australia	2485		
0900-1000	ABC, Tennant Creek, Australia	2325 (ML)		
0900-1000	S Adventist World Radio, Portugal	9670		
0900-1000	A Radio for Peace Int., Costa Rica	7375 USB		
0900-1000	Radio New Zealand, Wellington	17730 9850a 15485a		
0900-1000	S Radio Bhutan, Thimpu	5023v		
0900-1000	Voice of Hope, Lebanon	6280		
0900-1000	BBC World Service, London, England	5975 6045 6180 6190 6195 7325 9410 9660 9740 9750 9760 11750		
0900-1000		11760 11940 12095 15070 15245 15285 15310 15360 15400 15420 17640 17705 17790 17885 21470 21660		
0900-1000		21710 21715 15190		
0900-1000	CFCF, Montreal, Quebec, Canada	6005		
0900-1000	CFCN, Calgary, Alberta, Canada	6030		
0900-1000	CHNS, Halifax, Nova Scotia, Canada	6130		
0900-1000	Christian Science World Svc, Boston	9455 17855 9840 9530 13760		
0900-1000	CKWX, Vancouver, British Columbia	6080		
0900-1000	CFRB, Toronto, Ontario, Canada	6070		
0900-1000	FEBC Radio Int'l, Philippines	11850		



Midwest

frequency

section

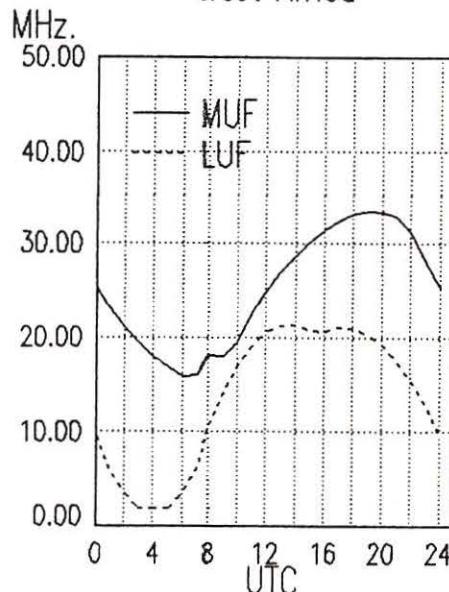
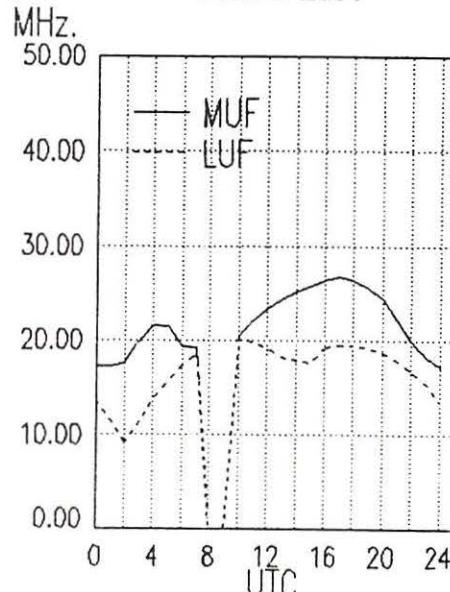
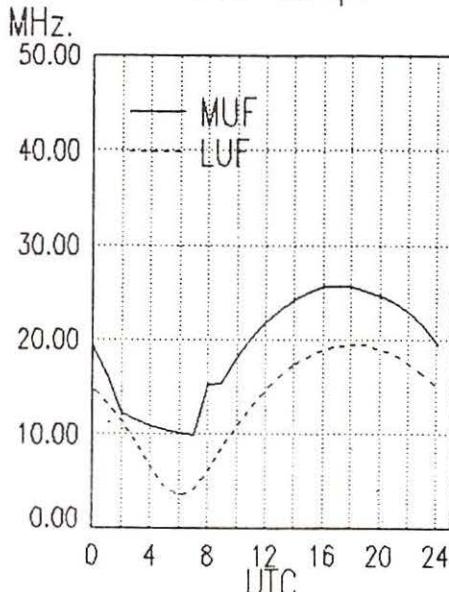
0900-1000	HCJB, Quito, Ecuador (alt. S. Pac. Sv.)	6130	1000-1030	Voice of Vietnam, Hanoi	12015	15010	9840
0900-1000	HCJB, Quito, Ecuador (S. Pac. Serv.)	9745 11925	1000-1030	Radio Beijing, China	11755	15440	17710
0900-1000	KUSW, Salt Lake City, Utah	6135	1000-1030	Swiss Radio International, Berne	9560	13685	17670 21695
0900-1000	Radio Japan Australian Svc., Tokyo	17890 15270	1000-1100	ABC, Alice Springs, Australia	2310	(ML)	
0900-1000	Radio Japan General Service, Tokyo	17810	1000-1100	ABC, Katherine, Australia	2485		
0900-1000	Radio Jordan, Amman	13655	1000-1100	Solomon Islands Broadcasting Co.	5020		
0900-1000	Radio Metro, Johannesburg, S. Africa	11805	1000-1100	ABC, Perth, Australia	9610		
0900-1000	UN Radio Tanpa, Nagara, Japan	3925	1000-1100	ABC, Tenant Creek, Australia	2325	(ML)	
0900-1000	Radio Tonga, Kingdom of Tonga	5030v	1000-1100	Adventist World Radio-Asia, Guam	13720		
0900-1000	Voice of Nigeria, Lagos	7255	1000-1100	Radio Moscow World Service	17790	15280	15405 17570
0900-1000	WHRI, Noblesville, Indiana	7355 9495	1000-1100	All India Radio, New Delhi	17685	17387	15050 15335
0900-1000	S WRNO Worldwide, Louisiana	6185	1000-1100		21735		
0920-1000	ABC, Perth, Australia	6140	1000-1100	BBC World Service, London, England	5975	6045	6180 6190
0930-1045	Radio Budapest, Hungary	15160 15220 11925 9835	9585 6110		6195	7325	9410 9660
0930-1000	Radio Australia, Melbourne	15415 11930 9760 9655	9580 6020 5995 15160		9740	9750	9760 11750
0930-1000		15240 9710			11760	15190	12095 15070
0930-1000	Radio Afghanistan, Kabul	17720 15250 4940 6085	9635		15285	15310	15360 15400
0930-0955	RRI Surabaya, Jawa Timur, Indonesia	2377	1000-1100		15420	17640	17705 17790
0930-1000	BBC English by Radio, London	7180 11955 15280 17830	1000-1100	CBN, St. John's, Nfld, Canada	17885	21470	21660 21710
0930-1000	CBN, St. John's, New Newfoundland	6160	1000-1100	CFCF, Montreal, Quebec, Canada	6160		
0930-1000	KTWR, Agana, Guam	11805	1000-1100	CFCN, Calgary, Alberta, Canada	6005		
0930-1000	Radio Beijing, China	11755 15440 17710	1000-1100	CHNS, Halifax, Nova Scotia, Canada	6030		
0935-0945	IRR Al-Quds Radio (Palestinian clandestine: Syria)	7460 (alt. 4320) ML	1000-1100	Christian Science World Svc, Boston	6130		
0945-1000	Radio Berlin International, GDR	6115	1000-1100	CKWX, Vancouver, British Columbia	9455	9495	9530 15115
0945-0948	Radio Prague, Czechoslovakia	9505 7345 6055	1000-1100	CFRB, Toronto, Ontario, Canada	6080		
0945-1000	Radio Budapest, Hungary	7220 9585 9835 11910	1000-1100	FEBC Radio Int'l, Philippines	6070		
		11925 15160 15220	1000-1100	ABC Brisbane, Australia	11850	9800	

1000 UTC [6:00 AM EDT/3:00 AM PDT]

1000-1015	KTWR, Agana, Guam	11805	1000-1100	ABC Brisbane, Australia	9660		
1000-1030	Radio Afghanistan, Kabul	17720 15250 4940 6085	1000-1100	WYFR, Okeechobee, Florida	5950		
1000-1030		9635	1000-1100	HCJB, Quito, Ecuador	9745	11925	
1000-1030	A Radio for Peace Int'l, Costa Rica	7375 USB	1000-1100	KTWR, Agana, Guam	11805		
1000-1030	Kol Israel, Jerusalem	11585 15485 15650 17575	1000-1100	KUSW, Salt Lake City, Utah	6135		
1000-1030		17590 21745 21780	1000-1100	Radio Jordan, Amman	13655		
1000-1030	Radio Australia, Melbourne	9580 9655 15415 11930	1000-1100	Radio Metro, Johannesburg, S. Africa	11805		
1000-1030	Radio New Zealand, Wellington	9770 5995 6020 17715	1000-1100	Voice of America-Caribbean Service	9590	11915	
1000-1030	Radio Berlin International, GDR	15485	1000-1100	Voice of America-Pacific Service	5985	11720	15425
		6115	1000-1100	Voice of Nigeria, Lagos	7255		
			1000-1100	S WRNO Worldwide, Louisiana	6185		
			1030-1045	Radio Budapest, Hungary	15160	6110	9835 15160
			1030-1100	Radio Australia, Melbourne	15415	11930	9770 9580
			1030-1100	Radio Austria Int'l, Vienna	6020	5995	9710 9665
			1030-1100	Radio Korea, Seoul	15450	21490	
			1030-1100	Adventist World Radio, Forli, Italy	11715		
			1030-1100		7230		

Midwest

Midwest To
Arctic Europe



frequency

section

1045-1049 Radio Prague, Czechoslovakia 9505 7345 6055
 1050-1100 Radio Finland, Helsinki 15400 21550
 1030-1100 Radio Netherlands Int'l, Hilversum 6020 11890

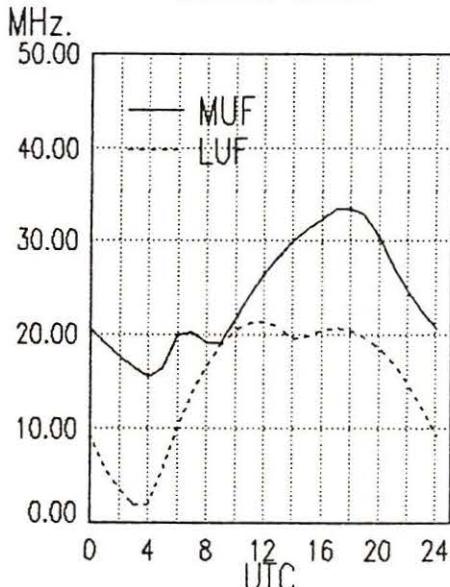
1100-1200 CHNS, Halifax, Nova Scotia, Canada 6130
 1100-1200 Christian Science World Svc, Boston 9495 9495 9530 15115
 1100-1200 CKWX, Vancouver, British Columbia 6080
 1100-1200 CFRB, Toronto, Ontario, Canada 6070
 1100-1200 KUSW, Salt Lake City, Utah 9850
 1100-1200 Radio Beijing, China 17855
 1100-1200 Radio Japan, Tokyo 6120 11815 11840
 1100-1200 Radio Jordan, Amman 13655
 1100-1200 Radio RSA, Johannesburg 17835 11900 11805 9555
 1100-1200 Voice of America-Caribbean Service 9590 11915
 1100-1200 Voice of America-East Asia Service 5985 6110 9760 11720
 15155 15425

1100 UTC [7:00 AM EDT/4:00 AM PDT]

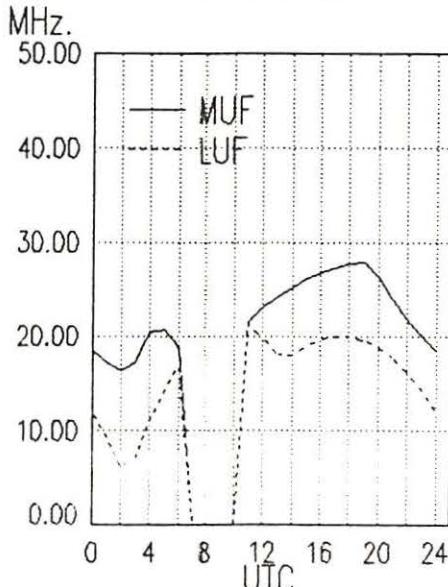
1100-1115 Azad Kashmir Radio, Pakistan 7268 4980 3665
 1100-1115 Radio Pakistan 21575 17555
 1100-1115 Radio Finland, Helsinki 15400 21550
 1100-1115 BBC World Service, London, England 5965 5975 6045 6180
 6190 6195 7325 9410
 9660 9740 9750 9760
 11750 11760 11775 11940
 12095 15070 15140 15310
 15420 17640 17705 17790
 17885 21470 21660 9515
 15285 15360 15400
 1100-1125 HCJB Quito, Ecuador 11925 9745
 1100-1125 Radio Netherlands Int'l, Hilversum 6020 11890
 1100-1130 Solomon Islands Broadcasting Co. 5020
 1100-1130 Radio Mozambique, Maputo 11835 11818 9525
 1100-1130 Voice of the Democratic Alliance of Burma
 (clandestine: Thai/Burmese border) 7137v
 1100-1130 Adventist World Radio, Forli, Italy 7230
 1100-1130 Radio Australia, Melbourne 9665 5995 6080 7215
 9580 9710 9770 11800
 1100-1130 Swiss Radio International, Berne 13635 15570 17830 21770
 1100-1145 Radio Berlin International, GDR 17780 13690 9665 6115
 1100-1150 Radio Pyongyang, North Korea 11735 9977 9645
 1100-1150 Deutsche Welle, Köln, West Germany 15410 17765 17800 21600
 1100-1155 Radio Beijing, China 17855
 1100-1200 ABC, Alice Springs, Australia 2310 (ML)
 1100-1200 WHRI, Noblesville, Indiana 9465 11790
 1100-1200 WYFR, Okeechobee, Florida 5950
 1100-1200 Adventist World Radio, Costa Rica 9725 11870
 1100-1200 Radio Moscow World Service 11840 9765 15320 17810
 1100-1200 ABC, Brisbane, Australia 9660
 1100-1200 ABC, Katherine, Australia 2485
 1100-1200 ABC, Perth, Australia 9610
 1100-1200 ABC, Tennant Creek, Australia 2325 (ML)
 1100-1200 Trans World Radio, Bonaire 11815 15345
 1100-1200 CBN, St. John's, Newfoundland, Can 6160
 1100-1200 CFCF, Montreal, Quebec, Canada 6005
 1100-1200 CFCN, Calgary, Alberta, Canada 6030

1100-1200 S WRNO Worldwide, Louisiana 6185
 1115-1145 Radio Nepal, Katmandu (External Svc.) 5005
 1115-1130 BBC World Service, London, England 5965 5975 6045 6180
 6190 6195 7325 9410
 9660 9740 9750 9760
 11760 11775 11940 12095
 15070 15140 15285 15310
 15420 15360 15400 11750
 17705 17790 17885 21470
 21660 21710 25750 9515
 1115-1130 Vatican Radio, Vatican City 17840 21485
 1130-1145 BBC English by Radio, London 17810 21490
 1130-1145 RRI Yogyakarta, Yogyakarta, Indonesia 5046
 1130-1200 Radio Berlin International, GDR 11970 15440 17880 21465
 1130-1200 BBC World Service, London, England 5965 5975 6045 6190
 6195 7325 9410 9660
 9740 9750 9760 11760
 11775 11940 12095 15070
 15140 15310 15420 11750
 17705 17790 17885 21470
 21660 21710 25750 9515
 1130-1200 HCJB, Quito, Ecuador 11740
 1130-1200 Radio Australia, Melbourne 11930 7240 9770 9710
 9580 7215 5995 6035
 1130-1200 Radio Thailand 11905 9655 4830
 1130-1200 Radio Austria International, Vienna 6155 13730 15430 21490
 1130-1200 Radio Netherlands Int'l, Hilversum 5955 9715 17575 21480
 21520
 1130-1200 Voice of Islamic Republic of Iran 7190 7230 9695
 1135-1140 All India Radio, New Delhi 6065 7110 9610 9675
 1145-1152 Radio Prague, Czechoslovakia 9505 7345 6055
 1145-1200 A-H BBC English by Radio, London 7180 15280

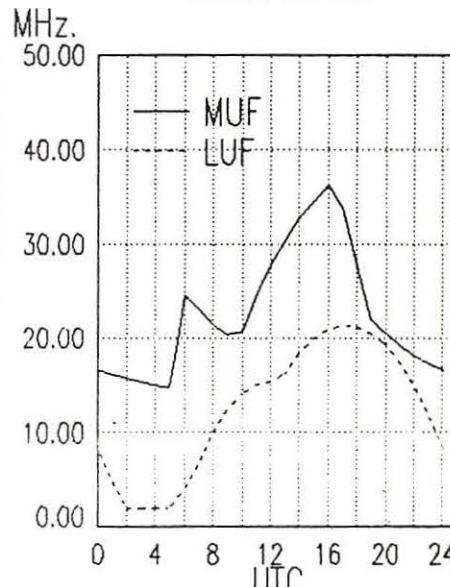
Midwest To
Central Africa



Midwest To
East Africa



Midwest To
South Africa



Midwest

frequency

section

1200 UTC [8:00 AM EDT/5:00 AM PDT]

1200-1215	Radio Berlin International, GDR	11970	15440	17880	21465
1200-1215	BBC English by Radio, London	6065	9680	11920	
1200-1215	Vatican Radio, Vatican City	17840	17865	21485	21515
1200-1225	Radio Netherlands Int'l, Hilversum	5955	9715	17575	21480
		21520			
1200-1225	Voice of Islamic Republic of Iran	7190	7215	7230	9695
1200-1225	M-F Radio Finland, Helsinki	15400	21550		
1200-1230	Radio Australia, Melbourne	11720	5995	7205	11800
		7215	9580	9710	9770
1200-1230	Radio Korea, Seoul	9570			
1200-1230	Radio Romania Int'l, Bucharest	15340	17720		
1200-1230	Radio Thailand	11905	9655	4830	
1200-1230	Radio Yugoslavia, Belgrade	11735	15165	15325	
1200-1230	Radio East Africa,	9585			
1200-1230	S Radio Norway International, Oslo	15165			
1200-1230	Radio Tashkent, Uzbekistan	5945	9540	9600	11785
		15470			
1200-1300	ABC, Alice Springs, Australia	2310	(ML)		
1200-1300	WWCR Nashville, Tennessee	15690			
1200-1300	ABC, Brisbane, Australia	9660			
1200-1300	M-F Radio Canada Int'l, Montreal	11855	17820	9635	11720
1200-1300	ABC, Katherine, Australia	2485			
1200-1300	ABC, Perth, Australia	9610			
1200-1300	Trans World Radio, Bonaire	11815	15345		
1200-1300	ABC, Tennant Creek, Australia	2325	(ML)		
1200-1300	Adventist World Radio, Costa Rica	9725	11870		
1200-1300	BBC World Service, London, England	5965	5975	6045	6190
		6195	7325	9410	9660
		9740	9750	9760	11750
		11760	11775	11940	12095
		15070	15140	15310	17640
		17705	17790	17885	21470
		21660	21710	25750	9515

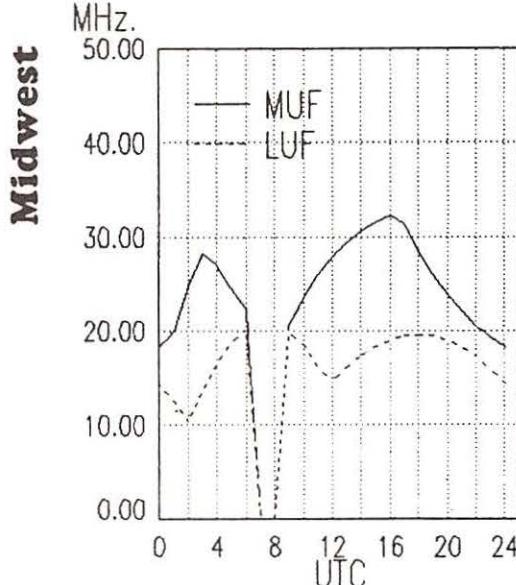
1200-1300	KUSW, Salt Lake City, Utah	9850
1200-1300	Radio Beijing, China	9530 17855 11600 15450
		11660
1200-1300	Radio Jordan, Amman	13655
1200-1300	Radio RSA, Johannesburg	17835 11900 11805 9555
1200-1300	Voice of America-East Asia Service	6110 9760 11715 15155
		15425 9530
1200-1300	WHRI, Noblesville, Indiana	11790 9465
1200-1300	S WRNO Worldwide, Louisiana	9715
1200-1300	WYFR, Okeechobee, Florida	5950 7355 11830 17640
		17750 11580
1215-1225	Radio Bayrak, Northern Cyprus	6150
1215-1230	S BBC English by Radio, London	6125
1215-1300	Radio Berlin International, GDR	11705 15240
1230-1300	Radio Australia, Melbourne	11930 9770 9580 7215
		7205 6080 6035 6020
1230-1240	Voice of Greece, Athens	17550 15630 11645
1230-1300	Voice of Turkey, Ankara	17785
1230-1300	Voice of Vietnam, Hanoi	15010 12010 9840
1230-1300	M-S-BRT Brussels, Belgium	21820
1230-1300	M-F-BRT Brussels, Belgium	21815
1230-1300	BBC English by Radio, London	6125 9515 9560 9600
		9635 11710 11780 11845
		12040 15115 15390 15435
		17695 17880 17795 21695
1230-1300	Radio Bangladesh, Dhaka	15195 11705
1230-1300	Radio France International, Paris	9805 11670 15155 15195
1230-1300	Radio Sweden, Stockholm	17650 21635 21645
1245-1300	Radio Prague, Czechoslovakia	15190 21570 17740
1245-1300	Radio Berlin International, GDR	5905 7345 6055
		11970 15440 17880 21465

1300 UTC [9:00 AM EDT/6:00 AM PDT]

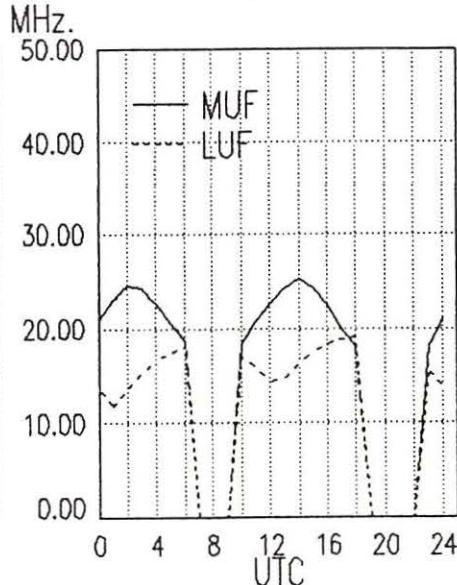
1200-1300	CBU, Vancouver, British Columbia	6160
1200-1300	CFCF, Montreal, Quebec, Canada	6005
1200-1300	CFCN, Calgary, Alberta, Canada	6030
1200-1300	CHNS, Halifax, Nova Scotia, Canada	6130
1200-1300	Christian Science World Service	9495
1200-1300	CKWX, Vancouver, British Columbia	6080
1200-1300	Radio Moscow World Service	12025
1200-1300	CFRB, Toronto, Ontario	6070
1200-1300	HCJB, Quito, Ecuador	11740

1300-1325	Radio Finland, Helsinki	15400 21550
1300-1330	Radio Tirana, Albania	11855 9500
1300-1330	S Radio Norway International, Oslo	9590
1300-1330	Radio Canada Int'l, Montreal	11955 15385
1300-1330	S Trans World Radio, Bonaire	15345 11815
1300-1330	Swiss Radio Int'l European Service	3985 6165 9535
1300-1330	Radio Berlin International, GDR	11970 15440 17880 21465
1300-1345	Radio Berlin International, GDR	6115
1300-1345	BBC World Service, London, England	5965 5975 5995 6045
		6190 6195 7180 7325

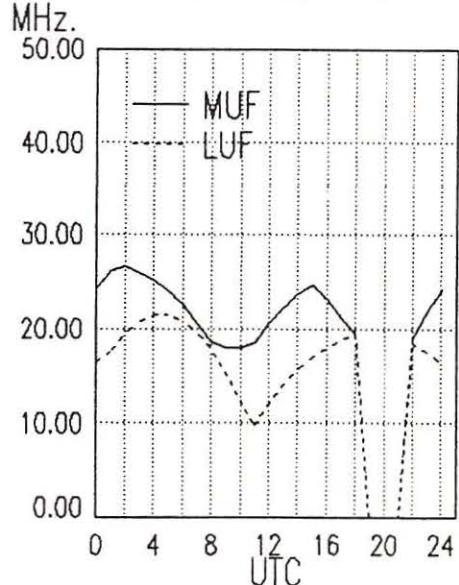
Midwest To
Indian Ocean



Midwest To
Central Asia



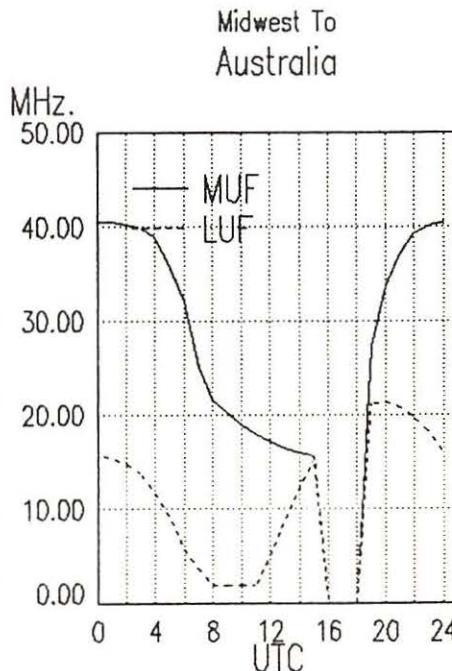
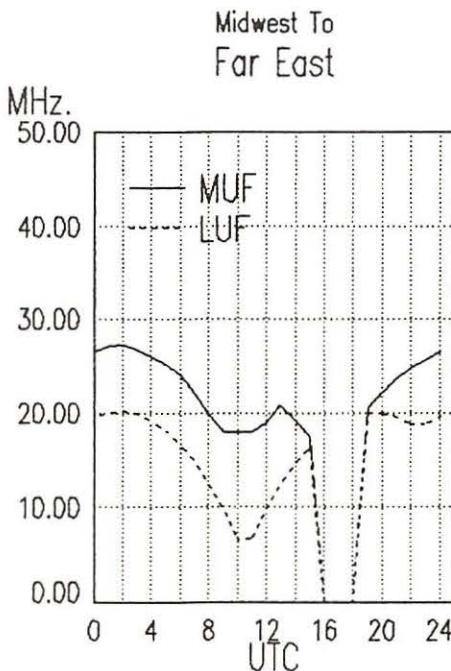
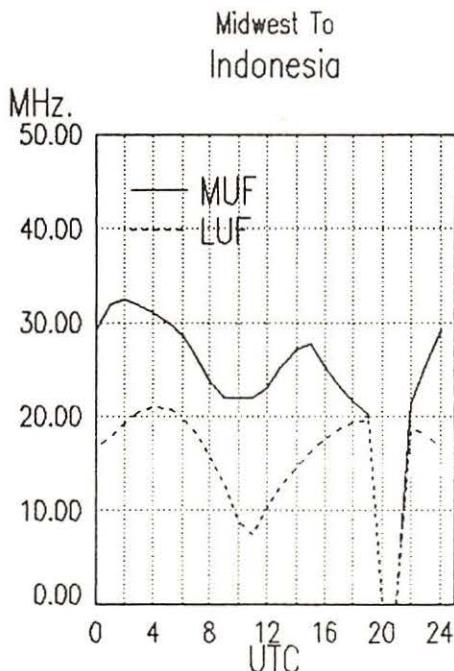
Midwest To
South East Asia



frequency

section

1300-1350	Radio Pyongyang, North Korea	9410 9660 9515 9750 9760 11750 11775 11940 12095 15070 15105 15140 15310 15420 17640 17705 17790 17885 21470 21660 21710 25750 9325 9345 9645 13650 15180	1330-1345 A,S Radio Finland, Helsinki 1330-1400 Laotian National Radio 1330-1400 A Trans World Radio, Bonaire 1330-1400 Radio Tashkent, Uzbekistan 1330-1400 Swiss Radio International, Berne 1330-1400 UAE Radio, Dubai 1330-1400 Voice of Vietnam, Hanoi 1345-1350 Radio Prague, Czechoslovakia 1345-1400 Radio Berlin International, GDR 1345-1400 Voice of Eelam (clandestine:northern Sri Lanka) 7000 1345-1400 BBC World Service, London, England 5975 5995 6045 6190 6195 7180 7325 9410 9660 9740 9750 9760 11750 11940 12095 15070 15140 15310 15420 17640 17705 17790 17885 21470 21660 21710 25750	21550 15400 7116V 11815 15345 5945 9540 9600 11785 15470 9620 11695 13635 15570 17830 21695 15320 17775 21605 9840 15010 12010 9505 7345 6055 9730 7000
1300-1400 S	Radio Canada Int'l, Montreal	11955 17820 11720		
1300-1400	ABC, Alice Springs, Australia	2310		
1300-1400	ABC, Brisbane, Australia	9660		
1300-1400	ABC, Katherine, Australia	2485		
1300-1400	ABC, Perth, Australia	9610		
1300-1400	ABC, Tennant Creek, Australia	2325 (ML)		
1300-1400	Adventist World Radio, Costa Rica	9725 11870		
1300-1400	CBC Northern Quebec Service, Canada	6265		
1300-1400	CBN, St. John's, Newfoundland	6160		
1300-1400	CBU, Vancouver, British Columbia	6160		
1300-1400	CFCF, Montreal, Quebec, Canada	6005		
1300-1400	CFCN, Calgary, Alberta, Canada	6030		
1300-1400	CHNS, Halifax, Nova Scotia, Canada	6130		
1300-1400	Christian Science World Service	9495 9465 11930 15285		
1300-1400	CKWX, Vancouver, British Columbia	6080		
1300-1400	CFRB, Toronto, Ontario, Canada	6070		
1300-1400	Radio Moscow World Service	11840 15475 17810 17700		
1300-1400	FEBC Radio Int'l, Philippines	11850		
1300-1400	HCB, Quito, Ecuador	11740 15115 17890		
1300-1400	KUSW, Salt Lake City, Utah	9850		
1300-1400	Radio Australia, Melbourne	5995 11930 7215 6020 7205 9580 21525 6035		
1300-1400	Radio Beijing, China	9530 11600 11660		
1300-1400	Radio Romania Int'l, Bucharest	11940 15365 17850 21550		
1300-1400	Radio Jordan, Amman	13655		
1300-1400	Radio Sta. Peace & Progress, Moscow	1870 15420 15330 15130 15320 17870 17880 17635 15535		
1300-1400	Voice of America-East Asia Service	6110 9760 11715 15155 15425		
1300-1400	WHRI, Noblesville, Indiana	9465 11790		
1300-1400 S	WRNO Worldwide, Louisiana	9715		
1300-1400	WWCR, Nashville, Tennessee	15690		
1300-1400	WYFR, Okeechobee, Florida	17750 9705 11580 11830		
1330-1400	All India Radio, New Delhi	13695 15215 17640 6015		
1330-1400	Radio Austria International, Vienna	11760 9565 15430		
			1400-1415 Azad Kashmir Radio, Pakistan 7268 4980 3665 1400-1420 Radio Jordan, Amman 13655 1400-1430 ABC, Alice Springs, Australia 2310 (ML) 1400-1430 ABC, Tennant Creek, Australia 2325 (ML) 1400-1430 BBC English by Radio, London 11860 15420 17740 1400-1430 Radio Juba, Sudan 9540/9550 1400-1430 Radio France International, Paris 11925 21780 1400-1430 S Radio Norway International, Oslo 21710 1400-1430 Radio Polonia, Warsaw, Poland 6095 7285 1400-1430 Radio Berlin International, GDR 9730 1400-1430 Radio Sweden, Stockholm 11905 17740 1400-1430 Radio Tirana, Albania 9500 11895 1400-1445 Radio Beijing, China 7405 1400-1500 Radio SPLA (clandestine: Sudan) 11710 9550 1400-1500 ABC, Brisbane, Australia 9660 1400-1500 S Radio Canada Int'l, Montreal 11955 11720 17820 1400-1500 Voice of the Mediterranean, Malta 11925 1400-1500 Radio Beijing, China 15165 11815 7405 1400-1500 Radio Korea, Seoul 15575 9750 9570 1400-1500 ABC, Katherine, Australia 2485 1400-1500 ABC, Perth, Australia 9610	



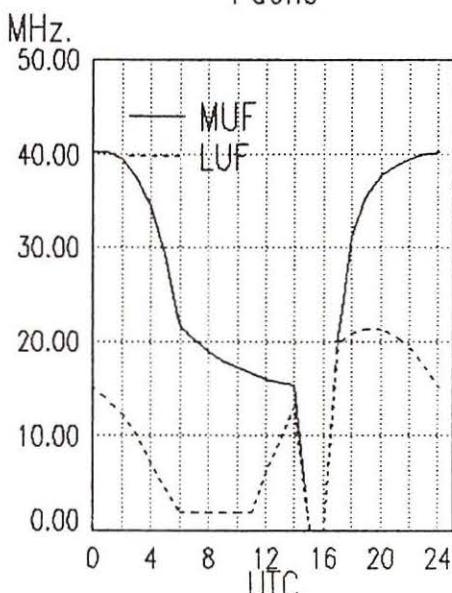
Midwest

frequency

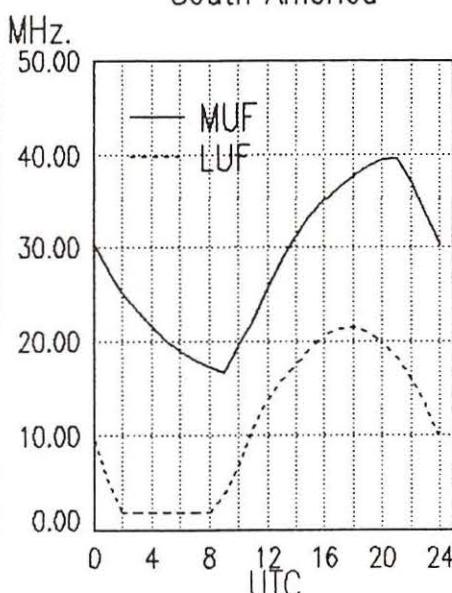
section

1400-1500	All India Radio, New Delhi	11760	9565		1430-1500	Voice of Myanmar (Burma)	5990v
1400-1500	BBC World Service, London, England	5975	6045	6190	1430-1500	F ABC, Alice Springs, Australia	2310 (ML)
		7325	9410	9660	1430-1500	F ABC, Tennant Creek, Australia	2325 (ML)
		9750	9760	11750	1430-1500	Radio Austria International, Vienna	6155 11780 13730 21490
		12095	15070	15140	1430-1500	Radio Netherlands Int'l, Hilversum	5955 13770 15150 17575
		17640	17705	17790	1430-1500		17840 21505
		21470	21660	21710	1445-1500	Vatican Radio, Vatican City	6248 7250 9645 11740
1400-1500	CBC Northern Quebec Service, Can	9625					
1400-1500	CBN, St. John's, Newfoundland	6160					
1400-1500	M-ACBU, Vancouver, British Columbia	6160					
1400-1500	CFCF, Montreal, Quebec, Canada	6005					
1400-1500	CFCN, Calgary, Alberta, Canada	6030					
1400-1500	CHNS, Halifax, Nova Scotia, Canada	6130					
1400-1500	Christian Science World Service	9530	15385	17555	1500-1515	Vatican Radio, Vatican City	11955 15090 17870
1400-1500	CKWX, Vancouver, British Columbia	6080			1500-1515	WYFR, Taiwan	11550
1400-1500	CFRB, Toronto, Ontario	6070			1500-1525	Radio Netherlands Int'l, Hilversum	5955 13770 15150 17575
1400-1500	FEBC Radio Int'l, Philippines	11850			1500-1530	Radio Sofia, Bulgaria	11735 15310 15370 17825
1400-1500	HCJB, Quito, Ecuador	11740	15115	17890	1500-1530	Radio Sweden, Stockholm	17740 11905
1400-1500	KUSW, Salt Lake City, Utah	15590			1500-1530	Radio Romania Inter'l, Bucharest	15335 11940 15250 17720
1400-1430	Radio Australia, Melbourne	5995	11930	6080	1500-1540	FEBA, Seychelles	11745
		7205	9580		1500-1550	Radio Pyongyang, North Korea	11750 9977 9640 9325
1400-1500	Radio Japan General Service, Tokyo	11865	11815		1500-1550	Deutsche Welle, Koln, W. Germany	9735 11965 17765 21600
1400-1500	Radio Moscow World Service	11840	15475	17810	1500-1555	Radio Beijing, China	11815 15165 7405
		12010	21740		1500-1600	Radio Jordan, Amman	9560
1405-1430	Radio Finland, Helsinki	15185	21550	11820	1500-1600	S Radio Canada Int'l, Montreal	11955 17820 11720
1400-1500	Radio RSA, Johannesburg	17835	11925	9555	1500-1600	FEBA, Seychelles	15330 9590
1400-1500	Voice of America-East Asia Service	6110	9760	15155 15425	1500-1600	Voice of Hope, Lebanon	6280
1400-1500	Voice of America-South Asia Service	7125	9645	9760 15205	1500-1600	F ABC, Alice Springs, Australia	2310 (ML)
		15395			1500-1600	ABC, Perth, Australia	9610
1400-1500	Voice of Nigeria, Lagos	7255			1500-1600	F ABC, Tennant Creek, Australia	2325 (ML)
1400-1500	WHRI, Noblesville, Indiana	9465	15105		1500-1600	BBC World Service, London, England	3915 5995 6180 6190
1400-1500	S WRNO Worldwide, Louisiana	11965					6195 7180 7325 9410
1400-1500	WWCR, Nashville, Tennessee	15690					9740 9750 9760 11775
1400-1500	WYFR, Okeechobee, Florida	5950	6015	11580 13695			11750 11940 12095 15070
		17750					15260 15310 15400 17640
1405-1500	WYFR, Taiwan	11540					17705 17880 21470 21660
1415-1500	M-A Radio Bhutan	5023v					21710 25750 17790
1415-1425	Radio Nepal, Katmandu	5005	7165	(alt. 3230)	1500-1600	Voice of Myanmar (Burma)	5990v
1430-1500	Radio Sofia, Bulgaria	11735	15310	15370 17825	1500-1600	CBC Northern Quebec Service, Can	9625 11720 (ML)
1445-1500	Radio Berlin International, GDR	11970	17880		1500-1600	CBN, St. John's, Newfoundland	6160
1445-1500	RCI European News Svc, Montreal	11935	15315	15325 17820	1500-1600	CBU, Vancouver, British Columbia	6160
	{M-A add these: 15305 17795 21545}				1500-1600	CFCF, Montreal, Quebec, Canada	6005
1430-1500	Voice of Hope, Lebanon	6280			1500-1600	CFCN, Calgary, Alberta, Canada	6030
1430-1500	Radio Australia, Melbourne	11930	9580	7205 6080	1500-1600	CHNS, Halifax, Nova Scotia, Canada	6130
		6035	5995	15485	1500-1600	Christian Science World Service	9530 15385 17555 21780
					1500-1600	CKWX, Vancouver, British Columbia	6080

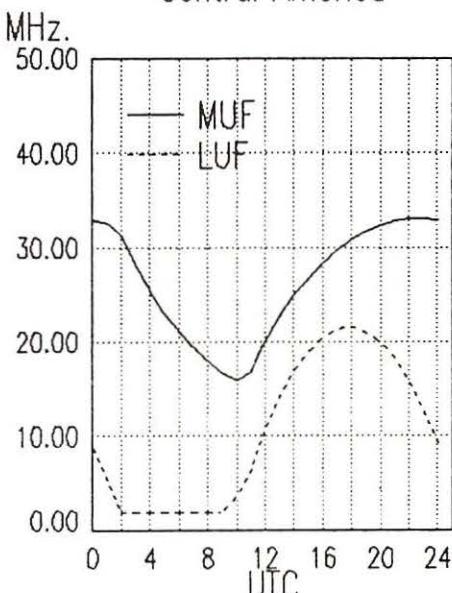
Midwest To
Pacific



Midwest To
South America



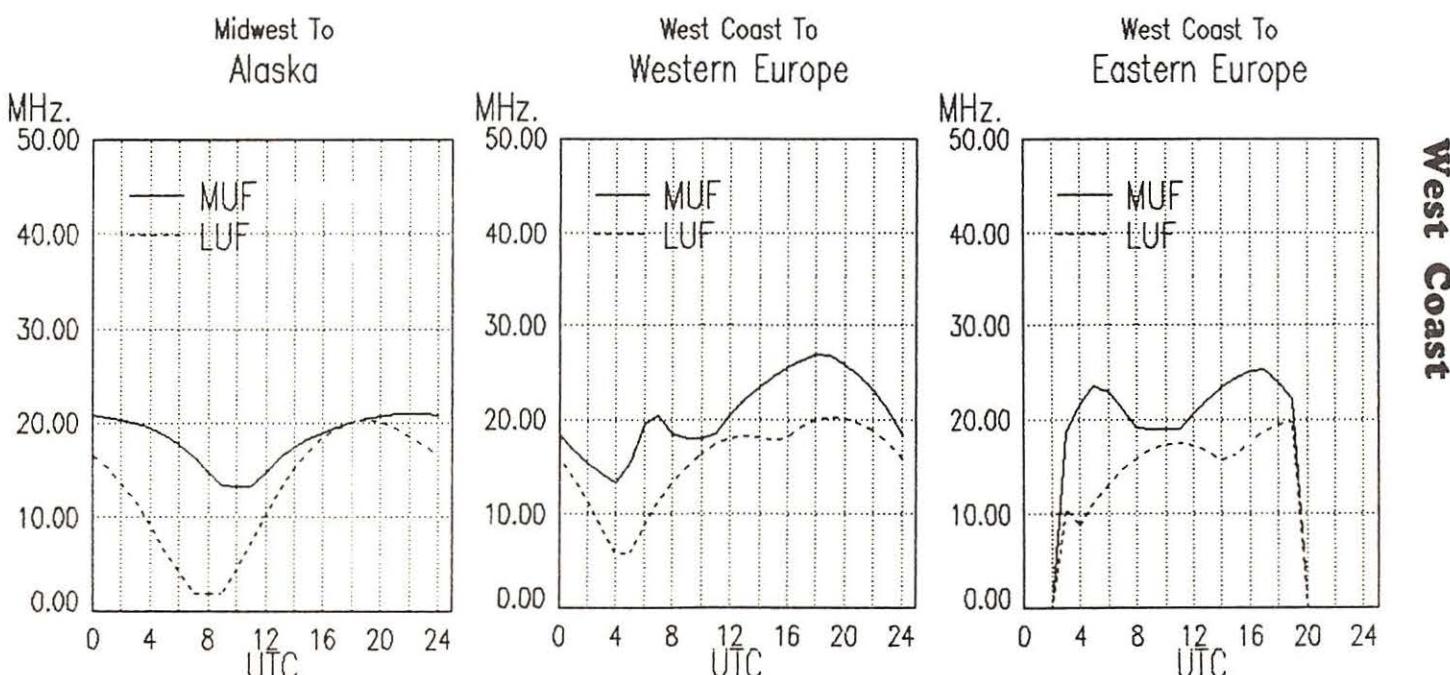
Midwest To
Central America



frequency

section

1500-1600	CFRB, Toronto, Ontario	6070	1600-1615	BBC World Service, London, England	3915	5975	5995	6180
1500-1600	FEBC Radio Int'l, Philippines	11850			6190	6195	7180	7325
1500-1600	HCJB, Quito, Ecuador	15115 17890			9410	11775	9740	9750
1500-1600	T-S KNLS, Anchor Point, Alaska	11715 (or 9750)			9760	11750	11940	12095
1500-1600	KTWR, Agana, Guam	11650			15070	15260	15310	15400
1500-1600	KUSW, Salt Lake City, Utah	15590			17640	17705	17860	17880
1500-1600	Radio Australia, Melbourne	5995 15245 9710 9770			21470	21660	21710	25750
		13745 7215 9580 15485	1600-1630	Radio Pakistan, Dacca	17580	13665	15605	21740
1500-1600	M-F Radiodiffusion Nationale du Burundi	6140			17895	21480		
1500-1600	Radio Japan General Service, Tokyo	11865 11815 21700	1600-1630	S Radio Norway International, Oslo	17760	21705		
1500-1600	Radio Moscow World Service	11840 15375 15585 17670	1600-1630	Radio Polonia, Warsaw, Poland	6135	9540		
		9655 9755 12010 12050	1600-1630	Radio Portugal, Lisbon	15210			
1500-1600	Radio RSA, Johannesburg S. Africa	17835 11925 9555	1600-1630	Radio Australia, Melbourne	11930	6035	6020	6080
1500-1600	Voice of America-Middle East Service	9700 15205 15260	1600-1630	Radio Berlin International, GDR	9710	13745	9580	15485
1500-1600	Voice of America-South Asia Service	6110 7125 9645 9700	1600-1630	Voice of Vietnam, Hanoi	9840	15010	12010	
		9760 15205 15260 9350	1600-1640	UAE Radio, Dubai	11790	15320	21605	15300
1500-1600	Voice of Nigeria, Lagos	7255	1600-1640	Radio Pyongyang, North Korea	9325	11760		
1500-1600	WHRI, Noblesville, Indiana	15105 21840	1600-1650	Deutsche Welle, Koln, W. Germany	6170	7225	15105	15595
		15420	1600-1650		17825	21680		
1500-1600	S WRNO Worldwide, Louisiana	15690	1600-1700	KSDA, Guam	11980			
1500-1600	WWCR, Nashville, Tennessee	5950 11830 13695 11580	1600-1700	Radio Korea General Service, Seoul	5975			
1500-1600	WYFR, Okeechobee, Florida	17750	1600-1700	F ABC, Alice Springs, Australia	2310 (ML)			
1515-1530	KTWR, Agana, Guam	11650	1600-1700	ABC, Perth, Australia	9610			
1515-1530	Radio Budapest, Hungary	15160 15220 11910 9835	1600-1700	F ABC, Tennant Creek, Australia	2325 (ML)			
1530-1540	M-A Voice of Greece, Althens	9585 7220	1600-1700	CBC Northern Quebec Service, Can	9625 (ML)			
1530-1555	M-ABRT Brussels, Belgium	11645 15630 17535	1600-1700	CBN, St. John's, Newfoundland	6160			
1530-1600	Radio Tirana, Albania	17580 21810	1600-1700	Radio Moscow World Service	11840	15375	17670	15425
1530-1600	Radio Omdurman, Sudan	11835 9500	1600-1700		17695	9655	7370	11995
1530-1600	Radio Sweden, Stockholm	11635 9550/9540	1600-1700	CBU, Vancouver, British Columbia	6160			
1530-1600	Swiss Radio International, Berne	17880 21610 21655	1600-1700	CFCF, Montreal, Quebec, Canada	6005			
1545-1600	Radio Berlin International, GDR	3985 13685 17830 21630	1600-1700	CFCN, Calgary, Alberta, Canada	6030			
1540-1555	S-F FEBA, Seychelles	7295 9730 15350 17780	1600-1700	CHNS, Halifax, Nova Scotia, Canada	6130			
1545-1600	BBC English by Radio, London	11865	1600-1700	Christian Science World Service	15385	21640	13745	15055
1545-1600	Radio Pakistan	9635 11945	1600-1700	CKWX, Vancouver, British Columbia	6080			
1545-1600	Vatican Radio, Vatican City	21740 21480 17895 17580	1600-1700	CFRB, Toronto, Ontario	6070			
1555-1600	M-A FEBA, Seychelles	15605 13665	1600-1700	KTWR, Agana, Guam	11650	11910	13720	
1555-1600	Vatican Radio, Vatican City	15120 17730 21650	1600-1700	KUSW, Salt Lake City, Utah	15590			
		11865	1600-1700	Radio Beijing, China	9570	15110	15130	13740
			1600-1700	Radio France International, Paris	9710			
1600-1610	M-A FEBA, Mahe, Seychelles	11865	1600-1700		6175	11705	17695	15360
1600-1610	Vatican Radio, Vatican City	6248 7250 9645 11740	1600-1700		17620	17795	17850	
1600-1615	Azad Kashmir Radio, Pakistan	7268 4980 3665	1600-1700	Radio Jordan, Amman	9560			



frequency

section

1600-1700	Radio Korea, Seoul, South Korea	5975	1700-1800	S-F WMLK Bethel, PA	9465
1600-1700	Trans World Radio-Swaziland	15135	1700-1800	Radio New Zealand	17680
1600-1700	Voice of America-Africa Service	7195 9575 11920 15410	1700-1800	Voice of America-Middle East Service	3980 6040 9700 9760
		15445 15580 15600 17785			11760 15205 15260
		17800 17870		Voice of America-South Asia Service	7125 9645 9700 15395
1600-1700	Voice of America-Middle East Service	3980 9700 15205 15260	1700-1800	WHRI, Noblesville, Indiana	13760 15105
1600-1700	Voice of America-Asia Service	7125 9645 9700 9760	1700-1800	WINB, Red Lion, Pennsylvania	15295
1600-1700	Voice of Nigeria, Lagos	7255	1700-1800	WRNO, New Orleans, Louisiana	15420
1600-1700	WHRI, Noblesville, Indiana	15105 21840	1700-1800	WWCR, Nashville, Tennessee	15690
1600-1700	WINB, Red Lion, Pennsylvania	15295	1700-1800	WYFR, Okeechobee, Florida	11830 13695 11580
1600-1700	WRNO, New Orleans, Louisiana	15420			17750 17885
1600-1700	WWCR, Nashville, Tennessee	15690	1709-1745	BBC Africa Service, London, England	6005 6190 9595 11940
1600-1700	WYFR, Okeechobee, Florida	11830 13695 17750 15566	1715-1800	Radio Pakistan	15400 17880
		11580 17612 21525 21615	1730-1740	Radio Bayrak, Northern Cyprus	11570 9815
1615-1630	RCI European News Svc, Montreal	11935 15305 15325 17820	1730-1755	BRT Brussels, Belgium	6150
1615-1620	Vatican Radio, Vatican City	9645 11740	1730-1800	Radio Sofia, Bulgaria	5910 11695 13675
1615-1630	BBC Africa Service, London	6005 6190 9595 11940	1730-1800	Radio Berlin International, GDR	11735 11840 15370
1615-1630	BBC English by Radio, London	15400 17880			9665 13610 15145 15350
1615-1700	BBC World Service, London, England	3915 5975 6180 6195	1730-1800	Vatican Radio African Service	17755
		7325 9410 9740 11775	1730-1800	Radio Romania Int'l, Bucharest	21650 17710 17730
		12095 15070 15260 15310	1745-1800	BBC World Service, London, England	15340 15365 17720 11940
		17640 17695 17860 21470			5975 6180 6195 7160
		21660 21710			7325 9410 9740 12095
1630-1655	BRT Brussels, Belgium	11695 5910			15070 15310 15400 17640
1630-1700	Radio Australia, Melbourne	9710 9580 11930 13745			17695 17880
1630-1700	Radio Netherlands, Hilversum	13700 11920 12000			
1630-1700	Radio Austria Int'l, Vienna	15570 6020			
1630-1700		11780 13730 21490			

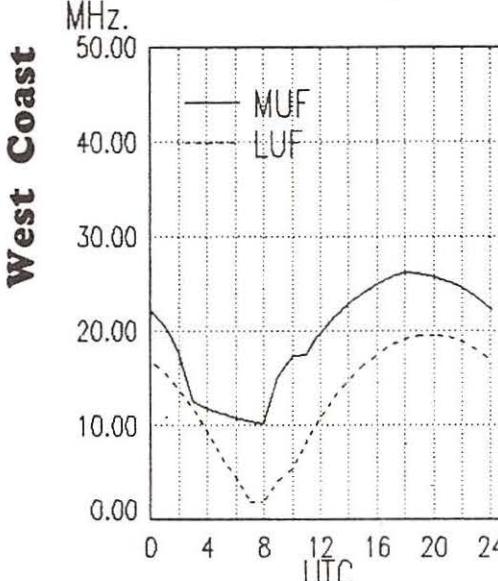
1700 UTC [1:00 PM EDT/10:00 AM PDT]

1700-1715	Kol Israel	11585 11655
1700-1730	Radio Netherlands, Hilversum	15570 6020
1700-1730 S	Radio Norway	25730 17765
1700-1800	BBC	12095 15070 15360 11775
1700-1800	Voice of America-Africa Service	7195 9575 11920 15410
		15445 15580 15600 17785
		17800 17870
1700-1800	Radio Moscow World Service	15375 17695 17670 11900
		11995 15425 12010

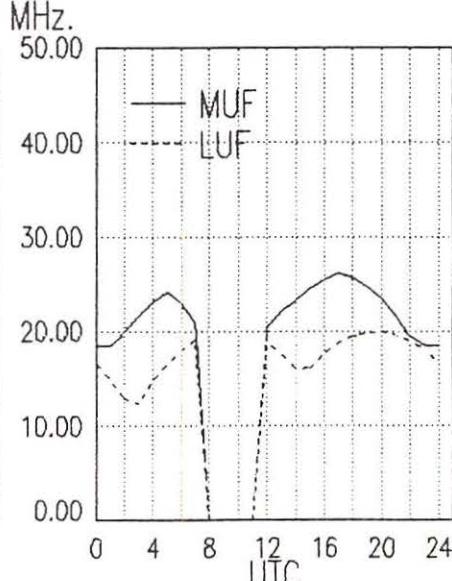
1800 UTC [2:00 PM EDT/11:00 AM PDT]

1800-1815	Radio Berlin International, GDR	17755 15350 15145 13610
		9665
1800-1830	M-F Radio Budapest, Hungary	15160 11910 9835 9585
		7220 6110
1800-1830	Radio Canada Int'l, Montreal	13670 15260 17820
1800-1830	Radio Kiev, The Ukraine	6010 6090 6165 7115
1800-1830	BBC World Service, London	3255 3955 5975 6180
		6190 6195 7160 7325
		9410 9740 11750 12095
		15070 15310 15400 17640
1800-1830 S	Radio Norway International, Oslo	17695 17880
1800-1830	Voice of Ethiopia, Addis Ababa	15165
1800-1830	Radio Sweden, Stockholm	9660
1800-1830	Radio Australia, Melbourne	6065 7265
		11930 6035 6020 6080
		7205 7215 9580 13740

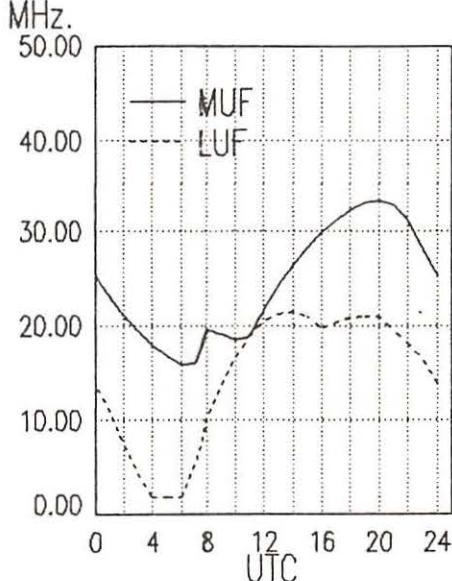
West Coast To Arctic Europe



West Coast To Middle East



West Coast To West Africa



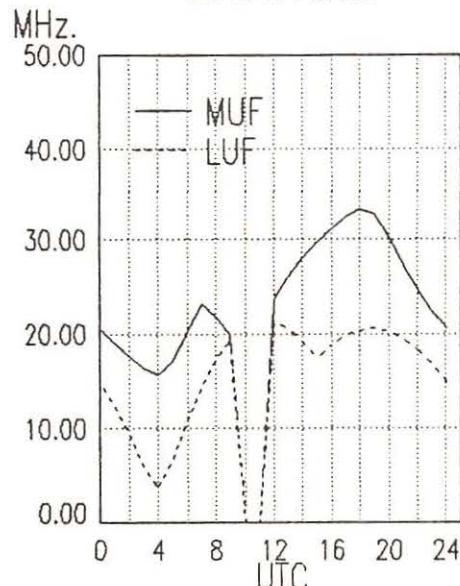
frequency

section

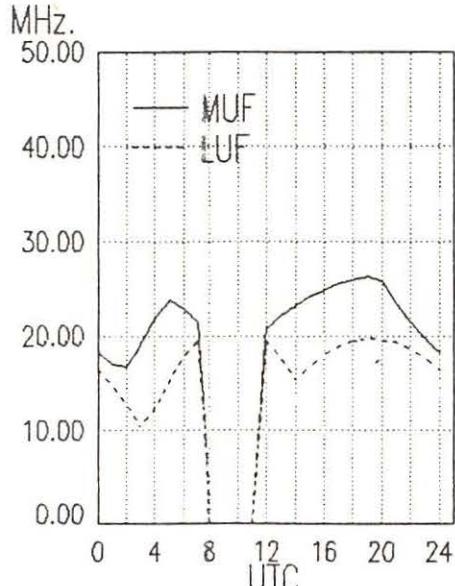
1800-1830	Voice of Vietnam, Hanoi	15010 12010 9840	1830-1900	A,S Radio Budapest, Hungary	6110 7220 9585 9835
1800-1830	Voice of Vietnam, Hanoi	12020 15010 9840	1830-1900	Radio Sofia, Bulgaria	11910 15160
1800-1845	Trans World Radio, Swaziland	15210	1830-1900	Radio Yugoslavia, Belgrade	15330
1800-1845	All India Radio, New Delhi	11935 15360	1830-1900	Radio Riyadh, Saudi Arabia	11735 7215 5980
1800-1850	Radio Bras, Brasilia, Brasil	15265	1830-1900	Radio Australia, Melbourne	9705 9720
1800-1855	Radio Mozambique, Maputo	9618 4855 3265	1830-1900	Radio Australia, Melbourne	11930 9580 7215 7205
1800-1900	F ABC, Alice Springs, Australia	2310 (ML)	1830-1900	A,S Radio Canada Int'l, Montreal	6080 6035 6020 5995
1800-1900	F ABC, Tennant Creek, Australia	2325 (ML)	1830-1900	M-F Radio Canada Int'l, Montreal	13670 15260 17820
1800-1900	Radio Korea, Seoul	15575	1830-1900	Radio Afghanistan, Kabul	21675 17875 15325 7235
1800-1900	KVOH, Rancho Simi, California	17775	1830-1900	Radio Tirana, Albania	5995
1800-1900	Radio Moscow World Service	11840 15375 17695 17670	1830-1900	BBC Africa Service, London	9635 7215 6020 15440
		15540 17570 15425 12050	1830-1900	BBC World Service, London, England	11830
		12010	1830-1900	Radio Netherlands Int'l, Hilversum	3255 6005 6190 9630
1800-1900	Radio New Zealand, Wellington	17680	1830-1900	Swiss Radio International, Berne	15400 17880
1800-1900	CBN, St. John's, Newfoundland	6160	1830-1900	Swiss Radio Int'l European Service	3985 6165 9535
1800-1900	CBU, Vancouver, British Columbia	6160	1840-1850	M-A Voice of Greece, Athens	11645 12105 15630
1800-1900	CFCF, Montreal, Quebec, Canada	6005	1845-1855	IRR RTV Guineenne, Conakry, Guinea	4702 7125v
1800-1900	CFCN, Calgary, Alberta, Canada	6030	1845-1900	GBC Radio, Accra, Ghana	6130
1800-1900	CHNS, Halifax, Nova Scotia, Canada	6130	1845-1900	All India Radio, New Delhi	15360 11935 11620 9550
1800-1900	Christian Science World Service	9455 21780 21640 17555	1850-1855	Africa No. 1, Gabon	7412
1800-1900	CKWX, Vancouver, British Columbia	6080			15475
1800-1900	CFRB, Toronto, Ontario	6070			
1800-1900	KUSW, Salt Lake City, Utah	15590			
1800-1900	Radio Jordan, Amman	9560			
1800-1900	Radio Kuwait, Safat, Kuwait	13610			
1800-1900	CBC Montreal	9625			
1800-1900	S-F WMLK Bethel, Pennsylvania	9465			
1800-1900	Radio RSA, Johannesburg, S. Africa	17765 15270 7230			
1800-1900	A,S Radio for Peace Int'l, Costa Rica	13660 21566			
1800-1900	Voice of America-Africa Service	7195 9575 11920 15410			
		15445 15580 15600 17785			
1800-1900	Voice of America-Middle East Service	6040 9700 9760 11760			
		17800 17870 21485			
		15205	1900-1915	Sierra Leone Brdcstng Co., Freetown	3316
1800-1900	WHRI, Noblesville, Indiana	13760 17830	1900-1920v	Radio Omdurman, Sudan	11635
1800-1900	WINB, Red Lion, Pennsylvania	15295	1900-1925	Radio Netherlands Int'l, Hilversum	6020 15560 17605 21685
1800-1900	WRNO, New Orleans, Louisiana	15420	1900-1930	Radio Afghanistan, Kabul	9635 7215 6020 15440
1800-1900	WWCR, Nashville, Tennessee	15690	1900-1930	M-F Radio Canada Int'l, Montreal	11740 15250 21530
1800-1900	WYFR, Okeechobee, Florida	11830 13695 11580 17750	1900-1930	Radio Japan General Service, Tokyo	11865 11850 15270
1815-1900	Radio Bangladesh, Dhaka	17885	1900-1930	S Radio Norway International, Oslo	15165
1830-1845	Radio Finland, Helsinki	15255 11705	1900-1930	M-F Radio Portugal, Lisbon	9840 15010 12010
1830-1855	Radio Polonia, Warsaw, Poland	11755 9550 6120	1900-1930	Voice of Vietnam, Hanoi	15640 11605 17630 15485
		5995 6135 7125 7285	1900-1930	Kol Israel, Jerusalem	17590 12077
		9525 11840	1900-1945	All India Radio, New Delhi	7412 11620 11935 15360
					9550

1900 UTC [3:00 PM EDT/12:00 PM PDT]

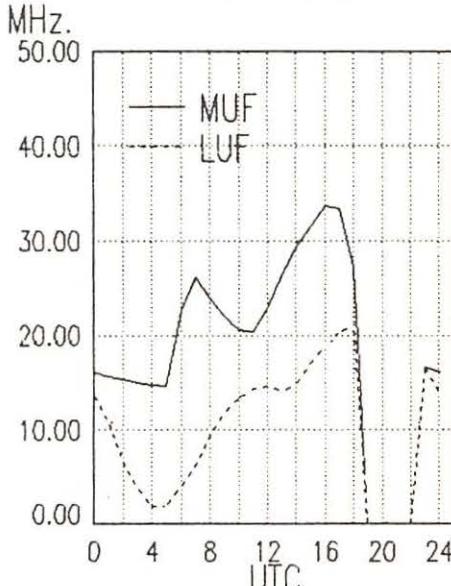
West Coast To
Central Africa



West Coast To
East Africa



West Coast To
South Africa



West Coast

frequency

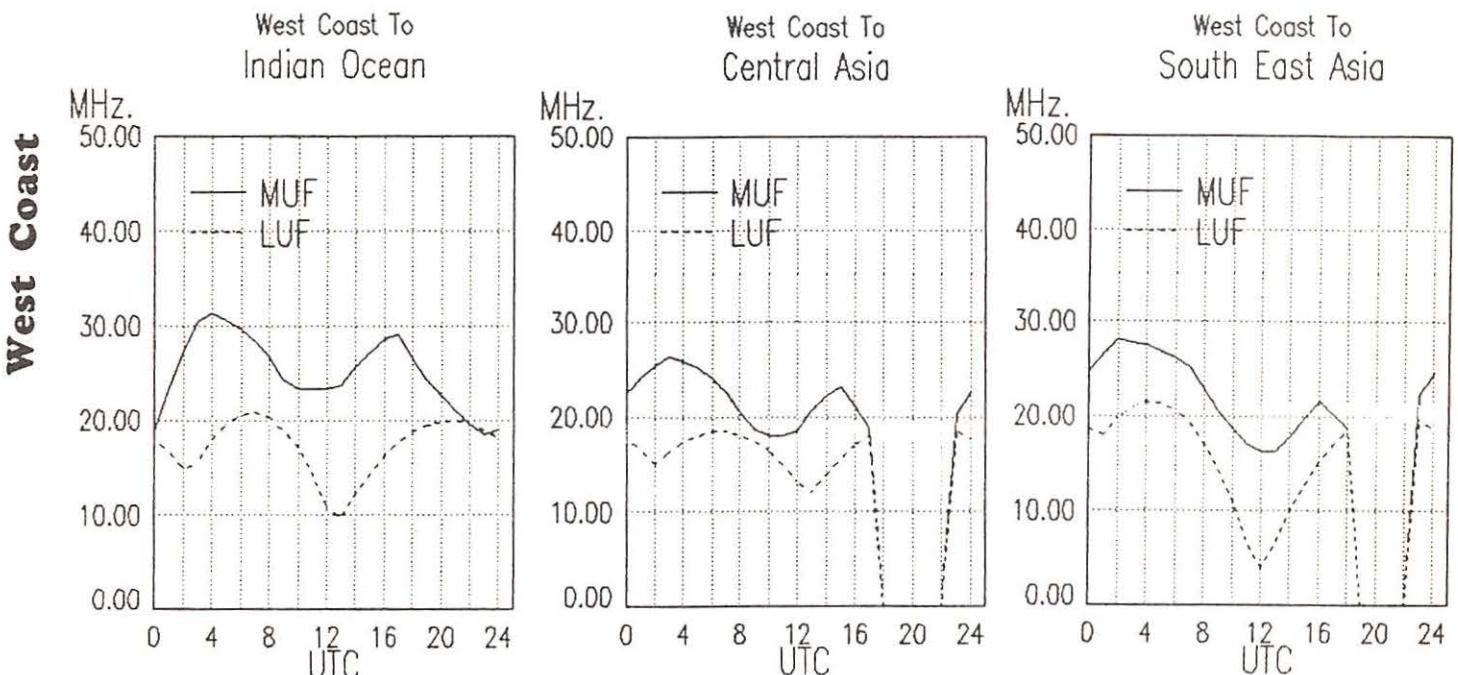
section

1900-1950	Deutsche Welle, Köln, W. Germany	11785 11810 13790 15390 17810
1900-2000	CBC, Montreal	9625
1900-2000	Radio New Zealand, Wellington	17680
1900-2000	Radio Moscow British Service	17695
1900-2000	Radio Moscow World Service	15540 15425 13605 12010 17570 17670
1900-2000	Solomon Islands Broadcasting Co.	5020
1900-2000	KVOH, Rancho Simi, California	17775
1900-2000	BBC World Service, London, England	3255 3955 6005 6180 6190 6195 7160 7325 9410 9630 11750 12095 15070 15140 15400 17880
1900-2000	CBN, St. John's, Newfoundland	6160
1900-2000	CBU, Vancouver, British Columbia	6160
1900-2000	CFCF, Montreal, Quebec, Canada	6005
1900-2000	CFCN, Calgary, Alberta, Canada	6030
1900-2000	CHNS, Halifax, Nova Scotia, Canada	6130
1900-2000	Christian Science World Service	9455 21780 21640 17555
1900-2000	CKWX, Vancouver, British Columbia	6080
1900-2000	CFRB, Toronto, Ontario	6070
1900-2000	GBC Radio, Accra, Ghana	6130
1900-2000	HJCB European Service, Ecuador	17790 15270 21470
1900-2000	KUSW, Salt Lake City, Utah	15590
1900-2000	Radio Algiers, Alger	9535 15215
1900-2000	Radio Australia, Melbourne	6035 11930 6080 7205 7215 9580 6020
1900-2000	Radio Havana Cuba	11800
1900-2000	Radio Jordan, Amman	9560
1900-2000	Radio Kuwait, Safat, Kuwait	13610
1900-2000 A.S	Radio for Peace Int'l, Costa Rica	13660 21566
1900-2000	Spanish National Radio, Madrid	15280 15375 15395
1900-2000	Voice of America-Africa Service	7195 15410 15445 15580 15600 17785 17800 17870 21485
1900-2000	Voice of America-Middle East Service	6040 9700 9760 11760 15205
1900-2000	Voice of America-Pacific Service	9525 11870 15180
1900-2000	WHRN, Noblesville, Indiana	13760 17830
1900-2000	WINB, Red Lion, Pennsylvania	15295
1900-2000 S-F	WMLK, Bethel, Pennsylvania	9465
1900-2000	WRNO, New Orleans, Louisiana	15420
1900-2000	WWCR, Nashville, Tennessee	15690
1900-2000	WYFR, Okeechobee, Florida	11830 13695 11580 15566 17885 21615 17612

1915-2000	Radio Berlin International, GDR	15350 13610 9665
1920-1930	M-A Voice of Greece, Athens	7430 9395 9425
1930-2000 M	Radio Tallin, Estonia	5925
1930-2000	Radio Austria International, Vienna	5945 6155 12010 13730
1930-2000	Radio Bucharest, Romania	9690 7195 6105 7105
1930-2000	Voice of the Islamic Republic Iran	9022 11895
1935-1955	RAI, Rome, Italy	7275 9710 11800
1945-2000	Radio Berlin International, GDR	6115
1945-2000	All India Radio, New Delhi	15360 11935 9550

2000 UTC [4:00 PM EDT/1:00 PM PDT]

2000-2005	Vatican Radio, Vatican City	7250 9645
2000-2010	Sierra Leone Brdcstng Co., Freetown	3316
2000-2030	BBC World Service, London, England	3255 3955 5975 6005 6180 6190 6195 7160 7180 7325 9410 9630 11715 11750 12095 15070 15140 15260 15400 17760 17880 17755
2000-2030	M-F Radio Portugal	15250
2000-2030	Radio Berlin International, GDR	6115 9665 13610 15340
2000-2030 M	Radio Ljubljana, Yugoslavia	5980 7240 9620
2000-2030	Radio Budapest, Hungary	11910 15160 9835 9585 7220 6110
2000-2030	Radio Australia, Melbourne	6035 7205 7215 9580 9620 6020
2000-2030	Radio Romania Int'l, Bucharest	9690 7105 7105 6105
2000-2030	Voice of the Islamic Republic Iran	9022 11895
2000-2050	Radio Pyongyang, North Korea	6576 9345 9977 9640
2000-2100	Radio for Peace Int'l, Costa Rica	21566 13660
2000-2100	Voice of Hope, Lebanon	6280
2000-2100	All India Radio, New Delhi	9950 11860 15360
2000-2100 M-AABC, Alice Springs, Australia	2310 (ML)	
2000-2100 ABC, Katherine, Australia	2485	
2000-2100 M-AABC, Tennant Creek, Australia	2325 (ML)	
2000-2100 CBN, St. John's, Newfoundland	6160	
2000-2100 CBU, Vancouver, British Columbia	6160	
2000-2100 CFCF, Montreal, Quebec, Canada	6005	
2000-2100 Radio Moscow World Service	17695 11630 11840 12060 15425 13605	
2000-2100	Voice of Turkey, Ankara	9795
2000-2100 CFCN, Calgary, Alberta, Canada	6030	
2000-2100 CHNS, Halifax, Nova Scotia, Canada	6130	

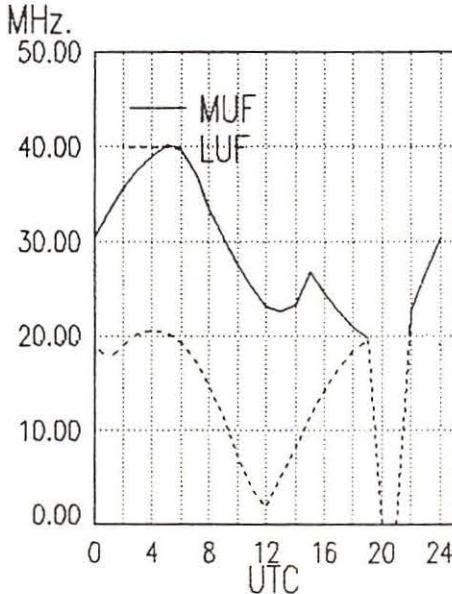


frequency

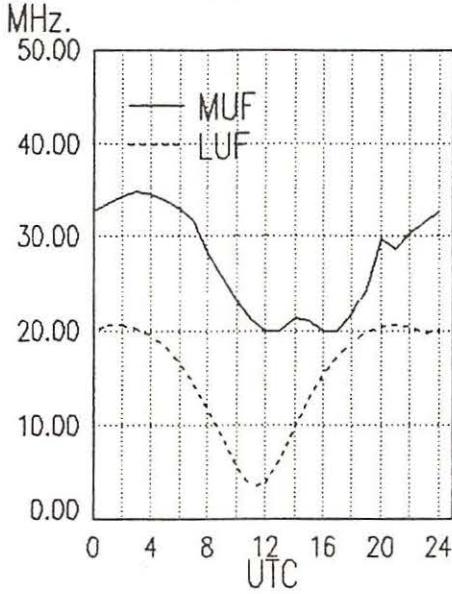
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2000-2100	Radio Baghdad, Iraq	13660	2050-2100	Vatican Radio, Vatican City	6190	7250	9645
2000-2100	Christian Science World Service	9455 13770 15610 17555					
		15265	2100 UTC [5:00 PM EDT/2:00 PM PDT]				
2000-2100	CKWX, Vancouver, British Columbia	6080	2100-2105	Radio Damascus, Syria	12085	15095	
2000-2100	CFRB, Toronto, Ontario	6070	2100-2110	Vatican Radio, Vatican City	6190	7250	9645
2000-2100	KUSW, Salt Lake City, Utah	15590	2100-2115	BBC World Service, London, England	3955	5975	6005 6180
2000-2100	Radio Beijing, China	11500 9920 15110			6195	7325	9410 11750
2000-2100	Radio Havana Cuba	11800			12095	15070	15140 15260
2000-2100	Radio Kuwait, Safat, Kuwait	13610			15400	17715	17760 17880
2000-2100	Radio Jordan, Amman	9560					17755
2000-2100	Voice of America-Africa Service	7195 15410 15445 15580					7225
		15600 17785 17800 17870					9860 13700 15560
		21485					17730 17710 21650
2000-2100	Voice of America-Middle East Service	6040 9700 9760 11760					3316
		15205					15575 7550 6480
2000-2100	WHRI, Noblesville, Indiana	13760 17830					9690 7195 7105 6105
2000-2100	WINB, Red Lion, Pennsylvania	15185					5990
2000-2100	WRNO, New Orleans, Louisiana	15420					5910 9925
2000-2100	KVOH, Rancho Simi, California	17775					17890 17810 15270 15230
2000-2100	Radio Moscow Africa Service	11850 7360					11835 11815
2000-2100	Solomon Islands Broadcasting Co.	5020					9655 11705
2000-2100	WWCR, Nashville, Tennessee	15690					9885 13635 15525 12035
2000-2100	WYFR, Okeechobee, Florida	11580 11830 13695 15215					6120 11755 15400
		15566 17612 21615					1700-2130
		21252 17885					9730
2005-2100	Radio New Zealand, Wellington	17680					11735 9660 9620 7215
2005-2100	Radio Damascus, Syria	12085 15095					Deutsche Welle, Kohn, West Germany
2025-2045	RAI, Rome, Italy	7235 9575 11800					9670 11810 9765 13780
2030-2100	BBC World Service, London, England	3955 5975 6005 6180					15435
		6195 7180 7325 9410					1700-2200
		11715 11750 12095 15070					15325 17875
		15140 15260 15400 17760					11715 11620 9910 9550
		17880					7412 7265
2030-2100	Radio Australia, Melbourne	9620 6020					1700-2200
2030-2100	Radio Sofia, Bulgaria	11660 15330 9700					17680
2030-2100	Radio Africa, Equatorial Guinea	7190					11980 11630 15355 11840
2030-2100	Radio Korea, Seoul	7550 6480 15575					15315 15425 15185 13605
2030-2100	Radio Netherlands Int'l, Hilversum	9860 13700 15560					15230
2030-2100	Voice of Vietnam, Hanoi	12020 15010 9840					CBN, St. John's, Newfoundland
2040-2048	M-A Voice of Greece, Athens	9425 11645 9395					6160
2045-2100	Radio Berlin International, GDR	6115					CBU, Vancouver, British Columbia
2045-2100	All India Radio, New Delhi	7412 9550 9910 11620					6160
		11715 7265					Voice of Hope, Lebanon
2045-2100	IBRA Radio, Malta	7110 7225					6280
2045-2100	Vatican Radio, Vatican City	9625 11700 11760 15120					CFCF, Montreal, Quebec, Canada
							6005
							CFCN, Calgary, Alberta, Canada
							6030
							CHNS, Halifax, Nova Scotia, Canada
							6130
							Christian Science World Service
							9455 13770 15610 17555
							15265
							7360 11850

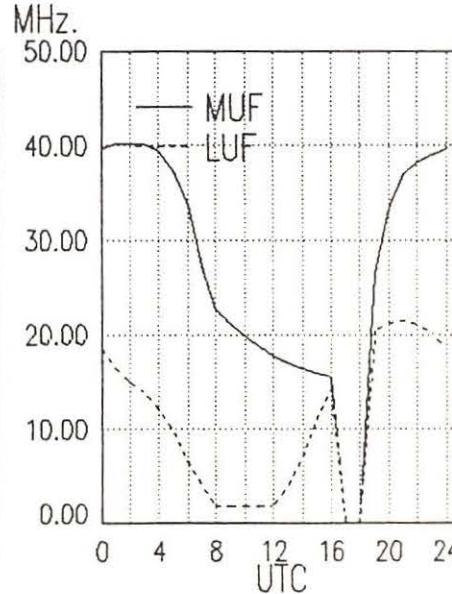
West Coast To
Indonesia



West Coast To
Far East



West Coast To
Australia



West Coast

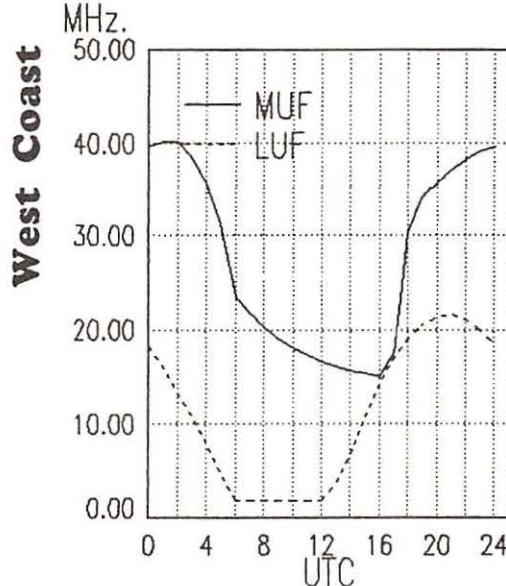
frequency

section

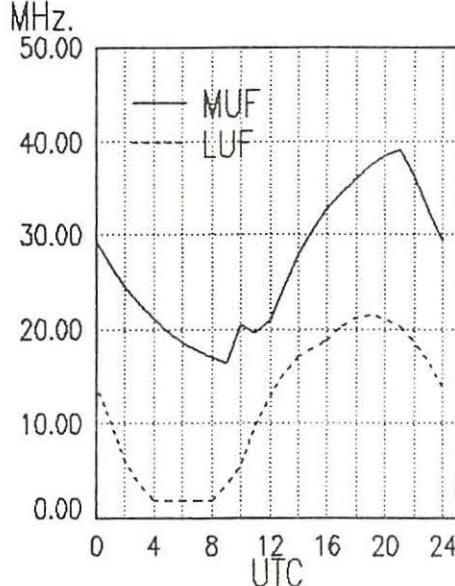
2100-2200	Solomon Islands Broadcasting Co.	5020	9545
2100-2200	CKWX, Vancouver, British Columbia	6080	
2100-2200	CFRB, Toronto, Ontario	6070	
2100-2200	KUSW, Salt Lake City, Utah	15590	
2100-2200	Radio Australia, Melbourne	17795	9620 15160
2100-2200	KVOH, Rancho Simi, California	17775	
2100-2200	Radio Baghdad, Iraq	13660	
2100-2200	Radio Beijing, China	11500	9920
2100-2200	Radio Jordan, Amman	9560	
2100-2200	Radio for Peace, Costa Rica	21566	13660
2100-2200	RAE, Buenos Aires, Argentina	11710	15345
2100-2200	Voice of America-Africa Service	7195	15410 15445 15580
		15600	17785 17800 17870
		21485	
2100-2200	Voice of America-Middle East Service	6040	9700 9760 11760
		15205	11710
2100-2200	Voice of America-Pacific Service	11870	15185 17735
2100-2200	WHRI, Noblesville, Indiana	13760	17830
2100-2200	WINB, Red Lion, Pennsylvania	15185	
2100-2200	WRNO Worldwide, Louisiana	13720	
2100-2200	WWCR, Nashville, Tennessee	15690	
2100-2200	WYFR, Okeechobee, Florida	11580	11830 13695 17885
		15566	17612 21615 21525
2110-2200	Radio Damascus, Syria	15095	12085
2115-2130	M-F BBC Caribbean Service, London	5975	15400 17715
2115-2130	BBC World Service, London, England	3955	6005 6195 7180
		7325	9410 11715 11750
		12095	15140 15260 17755
		15070	15400
2130-2145	BBC English by Radio, London	11945	15280
2130-2200	BBC World Service, London, England	3955	5975 6005 6195
		7325	9410 11750 12095
		15140	15260 17755 15070
		15400	
2130-2200	Kol Israel, Jerusalem	15640	12077 11605 17575
		17630	
2130-2200	Radio Sofia, Bulgaria	15330	11660
2130-2200	Radio Vilnius, Lithuania	6100	9675 666
2130-2200	Radio Canada Int'l, Montreal	11880	15150 17820
2130-2200	BBC English by Radio, London	6125	7125 9635
2130-2200	T-F BBC Falkland Islands Service, London	9915	
2130-2200	HCJB, Quito, Ecuador	15270	17790
2145-2200	Radio Berlin International, GDR	5965	11890 13690

2200 UTC [6:00 PM EDT/3:00 PM PDT]					
2200-2205	Radio Damascus, Syria	15095	12085		
2200-2215	Sierra Leone Brdcstng Co., Freetown	3316			
2200-2215	M-AABC, Alice Springs, Australia	2310	(ML)		
2200-2215	ABC, Tennant Creek, Australia	2325	(ML)		
2200-2215	BBC English by Radio, London	11945	15280		
2200-2225	M-F Voice of America-Caribbean Service	9640	11880 15225		
2200-2225	RAI, Rome, Italy	5990	7235 9710		
2200-2230	Radio Beijing, China	3985			
2200-2230	Radio Berlin International, GDR	5965	11890 13690		
2200-2230	Radio Vilnius, Lithuania	11790	13645 6100 15180		
		15455	15486 666		
2200-2230	Radio Prague, Czechoslovakia	6055			
2200-2230	ABC, Katherine, Australia	2485			
		11715	7265		
2200-2230	Radio Canada Int'l, Montreal	11705	11905 9755 5960		
2200-2230	Radio Sofia, Bulgaria	15330	11660		
2200-2230	S KGEI, San Francisco, California	15280			
2200-2230	S Radio Norway International, Oslo	15180			
2200-2245	All India Radio, New Delhi	7412	9550 9910 11620		
2200-2300	BBC World Service, London, England	3915	3955 5975 6005		
		6175	6195 7325 9410		
		9570	9590 9595 9915		
		11750	11955 12095 15140		
		15260	15400 15070 17750		
2200-2300	CBC Northern Quebec Svc, Canada	9625			
2200-2300	CBN, St. John's, Newfoundland	6160			
2200-2300	Radio Korea, Seoul	15575			
2200-2300	Radio Moscow North American Svc	12040	11780 11710 15315		
		15355	17735 15230 13605		
		15425			
2200-2300	Radio Moscow World Service	21790	21690 17655 15580		
2200-2300	Voice of Turkey, Ankara	17880	9445 9665 9685		
2200-2300	CBU, Vancouver, British Columbia	6160			
2200-2300	CFCF, Montreal, Quebec, Canada	6005			
2200-2300	CFCN, Calgary, Alberta, Canada	6030			
2200-2300	CHNS, Halifax, Nova Scotia, Canada	6130			
2200-2300	Christian Science World Service	9465	15275 15300 15405		
		17555			
2200-2300	CKWX, Vancouver, British Columbia	6080			
2200-2300	CFRB, Toronto, Ontario	6070			
2200-2300	KUSW, Salt Lake City, Utah	15580			
2200-2300	Voice of Hope, Lebanon	6280			

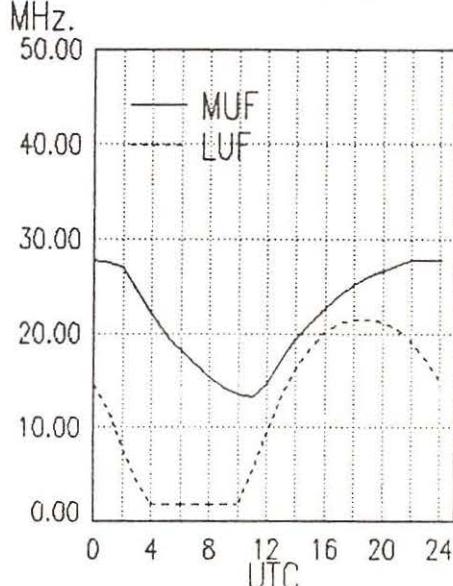
West Coast To
Pacific



West Coast To
South America



West Coast To
Central America



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2200-2300	Radio Australia, Melbourne	15160 15240 15320 17795 21740
2200-2300	Radio Havana Cuba	7140
2200-2300	Radio for Peace Int'l, Costa Rica	21566 13660
2200-2300	Radio Tonga, Kingdom of Tonga	5030V
2200-2300	Voice of America-East Asia Service	7120 9770 11760 15185 15290 15305 17735 17820 9852 11805 15345 15370 17610
2200-2300	Voice of America-Eur/Pac. Service	17845 15440
2200-2300	Voice of Free China, Taiwan	9600 11985 13605
2200-2300	United Arab Emirates R, Abu Dhabi	13760 17830
2200-2300	WHRI, Noblesville, Indiana	15185
2200-2300	WINB, Red Lion, Pennsylvania	15185
2200-2300	WRNO Worldwide, Louisiana	15185
2200-2300	WWCR, Nashville, Tennessee	15185
2200-2300	WYFR, Okeechobee, Florida	11830 13695 17885 17612 11580 21525 6055
2205-2220	Vatican Radio, Vatican City	9615 11830 15105
2230-2300	Radio Polonia, Warsaw, Poland	5995 6135 7125 7270
2230-2300	Radio Tirana, Albania	7215 9480
2230-2300	Swiss Radio Int'l, European Service	6190
2245-2300	BBC English by Radio, London	7180 11945
2245-2300	All India Radio, New Delhi	15110 11745 11715 9910 9535

2300 UTC [7:00 PM EDT/4:00 PM PDT]

2300-2310	Sierra Leone Brdcstng Co., Freetown	3316
2300-2315	BBC World Service, London, England	3915 5975 6175 6195 7325 9570 9590 9915 11750 11945 11955 15260 17875 12095
2300-2315	FEBC, Manila, Philippines	6030
2300-2325	Radio Finland, Helsinki	11755 15185
2300-2330	Kol Israel, Jerusalem	11605 9435 15640
2300-2330	Radio for Peace, Costa Rica	21566 13660
2300-2330	Radio Canada Int'l, Montreal	9755 11730
2300-2330	BBC English by Radio, London	6110 9825 11765 11820 15390
2300-2345	WYFR, Okeechobee, Florida	11580 5985 15440 15170
2300-0000	Adventist World Radio, Costa Rica	9725 11870
2300-0000	Radio Moscow North American Svc.	12040 11780 15315 15355 17735 15595 15425 13605 11710 12050

West Coast To Alaska

MHz.

50.00

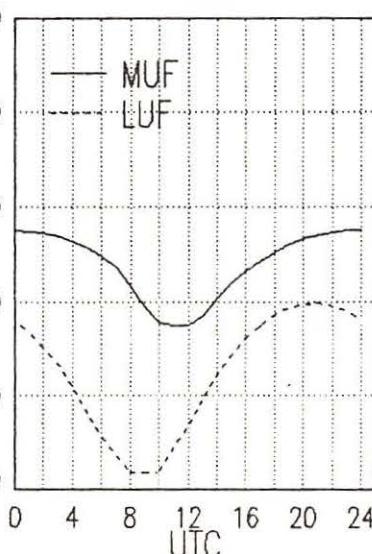
40.00

30.00

20.00

10.00

0.00



West Coast



Voices out of the past: Wayne Jurgensen of Gays Mills, Wisconsin, collected these QSLs back in 1962 - above, Radio Budapest; left, from Rumanian Radio and TV

2300-0000	Radio Moscow World Service	21690 21790 15580
2300-0000	Radio Sofia, Bulgaria	15330 11660
2300-0000	A,S KTWR, Guam	15125
2300-0000	CBN, St. John's, Newfoundland	6160
2300-0000	CBU, Vancouver, British Columbia	6160



SONY'S New ICF-SW7600 Portable

More expensive production costs and unfavorable foreign exchange rates have forced Asian world band manufacturers into stretching out the useful life of each model. Sometimes, as in the case of Sony's highly successful ICF-2010, a model is kept on the market "as is" for many years. At other times, when a model's sales flag, a basic design may be refurbished to produce a better, but not totally new, receiver. Such is the case with Sony's new ICF-SW7600.

(Some) New Tea in New Bags

The 'SW7600 replaces the earlier ICF-2003 which, in turn, had succeeded the original ICF-2002. Last time, the change was only in the model number -- the '2002 and '2003 were essentially identical. This time around, though, the cabinet has been thoroughly redesigned.

Fortunately, the changes didn't stop with appearance. More important are the refinements in operation.

Ergonomics Improved

To begin with, the ergonomics are generally better. Among various improvements is the placement of the zero key where it belongs: below the "8" in the three-by-three-over-one design. This follows the familiar pattern of telephone keypads, and is an improvement over Sony's past practice of placing the zero key under the "7".

Another ergonomic improvement is the inclusion of a handy LCD light that self-extinguishes after fifteen seconds. At last, you can listen in the dark without having to carry a flashlight or matches!

FM Stereo and Earpieces

Additionally, the 'SW7600 comes equipped with FM stereo and a set of stereo earpieces. This makes for very pleasant FM listening, and it also improves the quality of sound on world band. (Little speakers just don't hack it when it comes to providing quality audio.) The only drawback is that there are no serious tone controls.



This compact is great for air travel

That's the good news. Here are a few dollops of the less fortunate variety.

No S-Meter, No Tuning Knob, and Hidden Clock

First, the 'SW7600's 24-hour World Time clock that was displayed separately on the '2002 and '2003 is now visible only when the set is turned off. Second, the stereo earpieces provided are less pleasant to wear than are the ubiquitous Walkman-type foam-padded headphones. If you like to listen sans speaker, reach into your breeches and get a decent pair of Walkman headphones -- if you don't already have a set lying about.

Third, unlike Panasonic's RF-B65, the 'SW7600 has no tuning knob. Fourth, also unlike on the 'B65, there is no useful signal strength indicator -- just a solitary LED "glow light."

What makes some of these drawbacks -- especially the clock readout, which you

can't fix unless you tote along a separate clock or watch -- so unfortunate is that the cost to do it right would have been so minute (no pun intended). You shouldn't have to take the square root and cube it just to read World Time on a pricey radio like this.

What You're Used to is What You Get

By and large, the 'SW7600 continues in the tradition of its predecessors. As with the earlier '2002 and '2003, the 'SW7600 is tuned by a keypad, ten programmable channel memories, a meter-band selector, a rudimentary scanner, and a set of two-speed up/down slewing buttons.

When batteries are used, sensitivity to weak signals with the built-in telescopic antenna is good, but not quite equal to that of the best of the larger portables, such as the Sony '2010.

However, a tape-measure-like reel-in

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■ Sony ICF-2010	\$318
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outboard wire antenna, which is supplied with the radio, helps bring in weaker signals. Also, an outboard single-voltage AC power supply, which comes standard with the set, also tends to improve weak-signal reception as opposed to when batteries are used.

Selectivity is as good as you can expect from a portable with only a single bandwidth -- certainly better than that of Panasonic's otherwise-excellent RF-B65 compact portable.

Fussy Fine-Tuning Control

Although the 'SW7600's digital synthesizer tunes world band only in yawning 5 kHz increments (AM is tunable in 10 or 9 kHz increments), there is an analog fine-tuning control -- just as there was on the '2003 -- on the side of the set so you can go shinning between channels. This knurled thumbwheel can be used to slip the radio away from adjacent-channel interference, of course. But mainly it's needed to tune in single-sideband signals properly.

This little control, however, requires a mighty steady thumb to tune precisely. That's not all. It also doesn't change the frequency readout. A received frequency of, say, 9852 kHz might read out 9840, 9845, 9850, 9855, or 9860 kHz, depending on where the set was tuned before you fiddled with the fine-tuning control.

And the knob's tuning range is far wider than it should be, which is why it is so tricky to operate in the first place.

Furthermore, it doesn't reset automatically to zero adjustment when you retune the receiver. This makes it easy to forget and leave the offset in place as you're merrily tuning up and down the bands. When this happens, you may find stations mysteriously appearing on "incorrect" frequencies 5 or 10 kHz away. You get used to this eccentricity after a while, but in general it's best just to leave this control off except when you really need it.

Wouldn't it have been grand if Sony would have taken the trouble to clear up operation of the fine-tuning while they were in the process of redesigning the set?

Anyhow, let's go back to some good news -- price. The 'SW7600, at \$249.95, lists at \$50 *cheaper* than its predecessor.

The Bottom Line

Similar to the excellent Sony ICF-SW1S -- but slightly larger and much cheaper, and lacking most of the 'SW1S' accessories -- the new compact Sony ICF-SW7600 is great for air travel. Its selectivity, which is better than that of the competitive Panasonic RF-B65, makes it of interest to hobbyists and other voyagers of the airwaves who feel they can live without a decent signal-strength indicator.

mt

You can meet Larry Magne at the 1990 Monitoring Convention in Knoxville, Tennessee on October 5, 6 and 7. You can also hear Larry's equipment reviews the first Saturday of each month, plus *PASSPORT* editors Don Jensen and Tony Jones the third Saturday, over Radio Canada's "SWL Digest." For North America, "SWL Digest" is heard at 7:35 PM ET on 5960 and 9755 kHz, with a repeat Tuesday at 8:30 AM ET on 9635, 11855 and 17820 kHz.

PASSPORT's "RDI White Paper" equipment reports contain everything

found during its exhaustive tests of communications receivers, antennas and advanced portables. These reports are now available in the U.S. from Universal Shortwave and EEB; in Canada from PIF, C.P. 232, L.d.R., Laval PQ H7N 4Z9; in Europe from Interbooks, 8 Abbot Street, Perth PH2 0EB, Scotland, and Lowe Electronics stores; and in Japan from IBS-Japan, 5-31-6 Tamanawa, Kamakura 247. For a complete list of reports, send a self-addressed stamped envelope to RDI White Papers, Box 300-M, Penn's Park PA 18943.



Just a few short months ago, the idea of a continuous-coverage, 1000-channel-memory, hand-held scanner at an affordable price was just a fantasy. Now, AOR announces the AR1000. Private-labelled for AOR by Fairmate in Japan, the AR1000 offers an incredible amount of flexibility in a small package.

Measuring only 2-1/2" W x 6-7/8" H x 1-3/4" D, the new scanner is roughly the same size as the popular Uniden BC200XLT and Radio Shack PRO34. It is also a lightweight at only 12 ounces.

Touting a whopping frequency range of 8-600 and 805-1300 MHz, the AR1000 accepts up to 1000 memory channels in ten 100-channel banks which may be scanned in any combination. The memorized channels are permanently stored (until changed by the operator) in non-volatile RAM; you won't lose your channels even if the batteries fail.

Any of the 1000 channels may be designated as a priority channel, commanding reception if it should become active regardless of another operation taking place.

A thin (1/4" diameter) flex antenna is equipped with a standard BNC base for easy removal and substitution. Concentric volume and squelch control knobs are top-mounted for easy access on the belt, as is a handy tuning knob which allows up/down frequency adjustment on any channel frequency.

A 1/8" (3.5 mm) earphone jack permits private listening or the attachment of a larger external speaker for noisy environments. Audio quality is surprisingly good for a hand-held scanner, becoming distorted only at high listening levels; even then, voice reception is intelligible, although music is degraded considerably.

The AR-1000 Handheld

While the thin vinyl protective cover is not as substantial as the Bearcat cases, it does deter cosmetic damage and its clear front window allows excellent visibility to read the keypad beneath. An additional protective adhesive sheet should be pulled off the keypad to reveal the clearly-marked legends on the control panel.

A strong steel belt clip holds the scanner securely; a shoulder strap is also provided for carrying convenience when a belt is not worn or desirable for mounting the AR1000.

A handy feature for metropolitan monitoring is a DX/local (10 dB attenuation) switch. Under strong-signal barrages, this preventive helps maintain your sanity when other scanners are ridden with overload interference.

Four replaceable AA nicad cells are charged by an AC wall adaptor which may also be used to operate the radio without battery drain. A cigarette lighter adaptor is used for mobile power installations. All are included at no extra cost.

The high-contrast LCD readout may be brightly lit for night viewing by a button which shuts off automatically after five seconds to conserve battery life, which may be 6-8 hours, depending upon audio level and amount of receiver activity, before an overnight recharge is required.

AM, wideband FM or narrowband FM reception modes may be selected for any frequency on any channel, but no SSB mode is provided for reception of two-way shortwave communications. Individual-channel lockout permits the user to temporarily omit any channels from being scanned. An all-channel, two-second scan delay is also switch-selectable.

Up to ten different search ranges, with hold and up/down stepping, may be stored in the ten memory banks. Up to 100 search-stopped frequencies may be locked out during the search sequence to prevent the scanner from repeatedly stopping on the same frequencies.

Scan speed is an impressive 20 channels per second; search speed is an even-more-impressive 40 increments per second.

Search and manual tune increments may be keyboard-selected for any interval between 5 and 955 kHz, just so long as it is divisible by 5 or 12.5. Such a wide variety of steps provides choices to match virtually any bandplan allocation in the spectrum -- 5, 12.5, 20, 25, 30, 50, 100, 200 kHz and more.

Let's check it out

Switching on the AR1000 immediately places into channel 000, manual mode, awaiting further keyboard commands. A convenient keyboard lock prevents the unit from being accidentally reset by a bump while it is being carried.

Keyboard legends are easy to read -- especially after the protective film has been pulled off. Over 20 different prompts appear in the LCD window at various times to assist the user in keyswitch choices as well as alert him to frequency, channel and mode information.

Audio level is adequate, certainly comparable to other hand-carried radios, and distortion is not evident until the volume control is turned nearly full. Even then, while musical passages reveal the degraded sound, voices are still intelligible.

Weak-signal sensitivity is virtually identical to that of the popular Uniden BC200XLT, although the Bearcat whip seems to offer somewhat better signal capture than the AOR whip on some frequency ranges.

A profound improvement in signal strengths resulted from the substitution of an adjustable-length whip (the Grove ANT8; \$12.95 plus \$1.50 shipping from Grove Enterprises, PO Box 98, Brasstown, NC 28902) and is highly recommended for any scanner with such wide frequency coverage.

Somewhat irritating is the 1000's automatic 12.5 kHz increment default when you enter a frequency unless you include a 5 in the third decimal place. In the shortwave bands, allocations are on 5 kHz steps and in most parts of the VHF/UHF spectrum, they are on 15, 20 and 25 kHz channel spacings. An automatic 5 kHz default, or even a default to the last-selected step size, would have been far more desirable.

Programming is reasonably simple, although it takes some reading of the instructions since it is different from the familiar Bearcat routine. Once the pattern is learned, however, it becomes second nature.

Our initial impression of the new AOR AR1000 hand-held scanner is favorable. It has stepped above the shortcomings of its predecessors (erratic squelch, excessive delay, thin audio in the AR800, 880 and 900) and offers enormous frequency range and memory capacity not found in comparable scanners.

The AR1000 carries a manufacturer's recommended retail price of \$499, but is

available from Grove Enterprises at a discount price of only \$459 plus \$5 UPS shipping, and from other *MT* advertisers as well.

Cellular Restoration on the Realistic PRO-2022

The Realistic PRO2022 certainly is a look-alike for the all-time popular, but now-discontinued, PRO2005. But is the similarity only cosmetic? What tricks can be done to increase the utility of the lower-cost 2022, now available from Radio Shack outlets and Grove Enterprises? Of greatest interest, can cellular phone coverage, censored at the factory, be restored? Yes.

After removing the two upper back screws and the top lid, locate the black cable just behind the front panel. Adjacent to the cable are four diodes locations: D42, D43, D44 and D45.

D42 is not present; installed, it adds the 68-88 MHz European mid band (which includes the US 76-82 MHz mid band), removing the US 30-54 MHz low band. Even if a switch were also installed to allow the diode to be selected, additional components and realignment are necessary for that higher frequency coverage. Don't do it!

D43 is present, allowing the 800 MHz band to be received; the diode may be deleted so that the same microprocessor may be used in scanner models which don't have 800 MHz capability. Don't touch it!

D44 is present, deleting the cellular mobile and base frequencies. If one lead is cut, total 806-960 MHz frequency coverage is restored, including 30 kHz steps in the cellular band. Keep in mind, however, that mobile telephone eavesdropping is prohibited by the Electronic Communications Privacy Act!

This modification may void your warranty; it is best to cut the lead carefully, gently separating the gap slightly so that it may be resoldered in case the radio needs warranty repair later.

D45 is not present; installed, it makes the cellular 30 kHz increments change to 12.5 kHz. A small SPST switch connected in series with one lead of a

Feeling Left Out?



Have your favorite communications (Police, Fire, etc) moved to the 800MHz band? Are the scanners available which access this band too expensive? If you are like many scanning enthusiasts, this can be a real dilemma. For those of you who are still in a futile search for 800 MHz coverage on your hand held scanning radio, GRE America, Inc. has a product for you. Introducing the newly developed **Super Converter™ II** which has all of the features that you have come to enjoy in our **Super Converter™ 8001** (810 - 912 MHz coverage, etc.), and more.

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Introducing the **Super Converter 8001™** from GRE America, Inc. The **Super Converter 8001™** once attached allows any UHF scanning or monitoring receiver to receive the 810 to 912 MHz band.

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Super Amplifier™. The **Super Amplifier™** is a compact pre-amp designed to work with scanners and it amplifies the reception of the VHF/UHF bands (from 100MHz to 1GHz) as high as 20db.

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For more information, or a dealer near you (new dealers are welcome), contact GRE America, Inc. at the address below.

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Belmont, California 94002

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Fax: (415) 591-2001

1N914 or 1N4148 could allow selection of the 25 kHz step interval in those areas which utilize that channel spacing.

To do this, it is necessary to unsolder a shield under the circuit board which covers the solder pads for the diodes. Such a modification should only be attempted by someone familiar with electronic circuitry.

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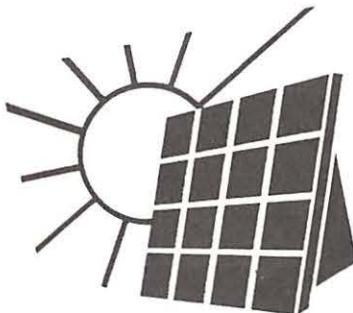


catalogs

On with the Show

June marks the event of the year for the consumer electronics industry. Officially titled "The 1990 International Summer Consumer Electronics Show" but better known among aficionados as the "CES," it's a chance for manufacturers, distributors, retailers, engineers and the media to take a look at the future of the electronics industry.

We're a little busy this year and we won't be able to make it out to Chicago for the CES -- not to mention that we didn't ('sniff') rate an invitation -- so we've decided to hold the first annual "Catalogues" Electronics Show. And lest anyone think that they have been forgotten, we want you to know that you are invited. C'mon in and let's get started.



Power from the Sun

Red Fuller of Ft. Bragg, North Carolina, passes along two catalogues, one of which offers its own peek into the future. The Real Goods catalogue offers an amazing and mouth-watering selection of alternative energy products.

Tops on our list is the Sovonics Sun Pal. Offered in three models, all are the size of a tablet of writing paper and less than 3/8 inches thick.

Model SP-102 can power

a portable radio, small cassette player or other appliance requiring less than 2 watts or less of power at 6 volts. Model SP-105 produces 6 watts at 17 volts and can handle a large radio/cassette player or small television and the SP-110 can crank out 12 watts at 17 volts -- enough to power small TVs and computers, not to mention most radios.

They are priced at a very affordable \$59, \$109, and \$195, respectively.

The Annual Real Goods catalogue is produced in the same way as is the Crutchfield catalogue (See "Catalogues" May, 1990); that is, the Real Goods catalogue is designed not only to sell products but also to educate. It's a fascinating read and an absolutely superb introduction into the world of alternative energy.

The main catalogue, called the *Alternative Energy Sourcebook* is available for \$10.00 (refundable with your first \$100.00 order) from 966 Mazzoni Street, Ukiah, California 95482.

Those interested in alternative energy might also want to see Michael McCloskey's 62 page, \$5.00 solar energy catalogue. Mike is a regular *Monitoring Times* reader and we can attest to the quality of his service firsthand. Contact his firm, Solar Futures, at P.O. Box 328, Placerville, California 95667.

Hear Like a Superhero

Johnson of Bangor, Maine, passes along an advertisement for the Sonic-Ear 9000. The large-type headline on the ad screams that the unit is, "as seen on TV" and can "hear a whisper up to 100 feet away."

This little gizmo, which is now being offered at "the unbelievable publicity price of just \$4.95" looks like a cheap pocket radio.

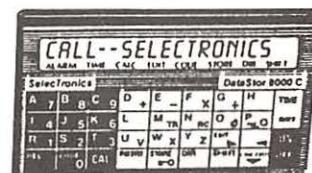
"Just imagine what it would be like," teases the ad,

"to hear sounds that you could never hear before. Slip on a pair of these technologically advanced headphones and you'll instantly hear like a superhero. Incredibly, you'll be able to hear people talking in the next room loudly and clearly, or a pin drop at 50 feet away."

All this is too much for us to live without. We'll put our \$4.95 check in the mail and let you know what we get. If you'd like to "hear like a superhero" -- and why should we have all the fun -- order your own from Sonic Ear, P.O. Box 769, Vinton, Virginia 24179-0796.

Rob was working on an overlay for his Sony '2010 that would help him keep track of the frequencies he had stored in its memory.

Now Rob checks in with a catalogue from a firm called EduCALC. "Just last week my order from EduCALC arrived. The DataStor 8000C (\$29.95) keeps the current time (in 12 hour AM/PM format and alarms at any preset day and time and then displays a message."



Rob offers this example: "Last night it alarmed at 11:59 pm and displayed the message, 'Ham Radio Today 9745.' It will store 16 such messages. It has very primitive edit functions; quick



search and a 2-level, tree-type directory with alarm links to messages."

Rob hails EduCALC as "a great mail order company. They have a no-questions-asked money-back guarantee and charge only \$1.00 for shipping. I've been doing business with them for 10 years."

The address is 27953 Cabot Road, Laguna Niguel, California 92677.

FM Reception Problems

Harry Somerfield, who writes the Home Entertainment column in the Manchester, New Hampshire, Union Leader, says that he has discovered a solution to FM reception problems.

The answer: The Terk pi2. It is, he says, "a most unusual looking device. It's a five-inch-in-diameter disk, about 3/4-inch thick, that can stand on one edge. Standing

upright it operates as a directional antenna. It can also 'lie down,' in which case it functions as an omnidirectional antenna."

What the Terk pi2 is is a signal amplifier. On the back is a gain control which is adjustable from minus-20db to plus 38-db, giving it the ability to boost weak stations or attenuate strong ones.

"Now," says Harry, "after several weeks of use, I find I can easily receive stations I didn't even know existed B.T. (Before Terk). I recommend it without reservation."

The Terk pi2 sells for \$80.00 and is available in most audio stores. If you can't find it and want to buy it, call Terk Technologies, 56 Harrison Street, New Rochelle, New York, 10801, at 1-800-223-8375.

Bending Time

Over here in our new products booth is a gentleman named Ross

Mitchell. Mitchell has just received a patent for his Acclimator watch.

The Acclimator, he says, was created to aid travelers with the psychological elements of jet lag by helping the mind to adjust to living hours ahead or behind what it's used to be. This is going to take some explaining.

With a regular watch, a person gets on a plane at 9:00 a.m. Philadelphia time would spend six hours in the air, arriving in Los Angeles at 2 p.m. Boston time. The travelers would then have to set back the watch three hours to match local (Los Angeles) time.

The person who wears the Acclimator watch, however, punches in the time at his destination and the hours to be spent in flight. Then, as the plane wings its way westbound, the hands of the Acclimator watch would move half as fast as normal time keeping, reverting to normal speed time keeping

upon arrival at the destination.

The Acclimator "is definitely not recommended for pilots in flight. And people who are taking medicine. I can see getting sued over that one -- people taking pills every hour instead of every two hours because their watches are ahead. We'll have a disclaimer."

Mitchell hopes to have the Acclimator on sale by this Christmas.

"Catalogs" welcomes your participation. See something interesting in your pile of fresh junk mail? Clip it and send it in! Add your own comments.

Be sure to include the name of the catalog, the item's description, price and shipping information along with the phone order number. Send it to "Catalogs," P.O. Box 98, Brasstown, NC 28902.



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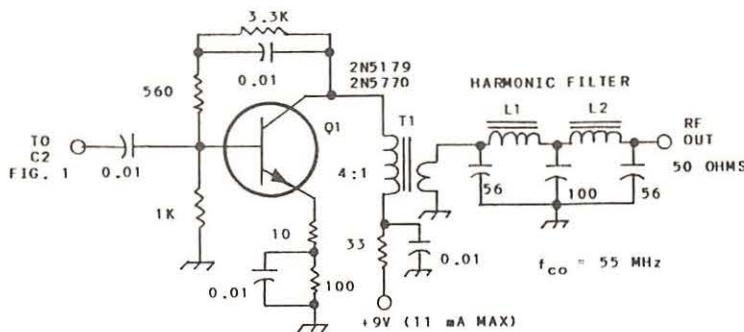


Figure 2 - Schematic diagram of a Class A RF amplifier for use with U1 of Figure 1. Decimal-value capacitors are in μ F. Others are in pF. Capacitors are disc ceramic. Resistors are 1/4-W carbon.

L1, L2 - 0.145 μ H inductor. Use 7 turns of no. 24 enam. wire on an Amidon T25-6 toroid core.

T1 - Broadband toroidal transformer. Use 10 primary turns of no. 26 enam. wire on an Amidon FT-25-61 (125 mu) ferrite toroid. Secondary winding has 10 turns of no. 26 wire.

control should be set accordingly. The absolute setting depends upon how much output you obtain from your mike.

Adding an amplifier

Figure 2 contains a circuit you may use to boost the output from U1 of Figure 1. A 2N5179 or 2N5770 transistor is fine for this task. Q1 operates as a fed-back Class A amplifier. Normally, a Class C amplifier is used in an FM transmitter, but there is too little output power from U1 to excite a Class C amplifier.

I chose the Figure 2 circuit for still another reason: it presents a 50-ohm input characteristic, and this makes it easy to interface it with the output tuned circuit of Figure 1. Through the use of shunt and degenerative feedback for Q1, the stage operates in a stable manner, even when the antenna is not attached. The stage gain is on the order of 12-15 dB.

T1 is a broadband toroidal transformer. It matches the 200-ohm collector impedance to a 50-ohm harmonic filter (L1, L2). The filter is designed for a cutoff frequency of 55 MHz and has a loaded Q of 1. This is called a half-wave filter.

The maximum collector current (Ic) for Q1 must not exceed 11 mA in order to comply with the 100-mW maximum dc-input power rule. You can insert a milliammeter in series with the +9-V lead to Q1 for measuring the collector current. If there is too much current flowing, simply change the 100-ohm emitter resistor to a higher value. Choose a value that causes 11 mA of collector current to flow.

Construction and such

I recommend that you use a low profile IC socket for U1 of Figure 1. If you keep all leads short and direct you should be able to wire the

circuit on a piece of perf board. A PC board will provide a neater package if it is within your expertise to make one.

L1 of Figure 1 is a slug-tuned coil that is used for putting the crystal on the desired frequency. This is called a "VXO" (variable crystal oscillator) circuit. The crystal can be "rubbered" lower in frequency by means of L1. A small PC-mount coil is suitable for use at L1.

Tuneup

Upon completion of the circuit you may monitor the transmitter signal in a receiver or with a sensitive field-strength meter. Merely adjust C1 and C2 for maximum signal at 49 MHz. Use a frequency counter for adjusting the operating frequency with L1.

Connect a 39-inch whip antenna to the transmitter output and readjust C2 for maximum signal. The 39-inch antenna is shorter than one quarter wavelength. In view of this limitation you may want to insert a small loading coil between the base of the whip and the transmitter output. Experiment with the number of coil turns as you adjust it for maximum output signal. C2 will need to be readjusted each time you make a change in the loading coil.

The antenna should be resonated (1/4 wavelength) if you plan to use the little amplifier in Figure 12. Otherwise, the output filter will have an incorrect termination. Even with a 1/4-wave whip there will be a slight mismatch, but the system will function satisfactorily. Ideally, the SWR should always be 1:1 between the transmitter and the antenna system. This ensures maximum power transfer.

Closing comments

The main purpose of this article is to introduce you to the 49-MHz license-free frequency, and to acquaint you with the virtues of the Motorola MC2831A chip. An imaginative experimenter can think of many ways to use this fascinating IC.

Motorola has an interesting LSI chip that is the heart of a dual-conversion FM receiver. This chip number is MC3362. This device should serve nicely as the heart of an FM receiver to use with the MC2831A transmitter. The oft-mentioned Dick Tracy wrist radio may be closer at hand than we thought!

mt

DATAMETRICS COMMUNICATIONS MANAGER

SCAN MEMORY FILE		Status Indicators	
Filename : MONITOR.FRG		Frequency :	800.5000
Longest duration :	0	Signal :	800.5100
Minimum duration :	0	Time :	06:42:51
Delay :	2	Monitor time :	1.05
Autolog (G,S,D) :	0	Scan rate :	9.65
Bounceback :	0		
Air rescue command channel			
800.0000	800.1000	800.2000	800.3000
800.0100	800.1100	800.2100	800.3100
800.0200	800.1200	800.2200	800.3200
800.0300	800.1300	800.2300	800.3300
800.0400	800.1400	800.2400	800.3400
800.0500	800.1500	800.2500	800.3500
800.0600	800.1600	800.2600	800.3600
800.0700	800.1700	800.2700	800.3700
800.0800	800.1800	800.2800	800.3800
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* Requires ICOM R7000 and IBM PC with 512K RAM and serial port

* Manual available for system evaluation at \$15

Fast Scan for the ICOM R-7000

"Experimenter's Workshop" is an easy column to write. You, the reader, provide a lot of the input (in one form or another) and it falls to me to make sense of the mail and put it into the column.

Case in point: several months ago I was deluged with letters requesting mods for the ICOM R-7000 receiver. In particular, there was one mod that was desired above all others, and that was a method of increasing the scanning speed. Several months after including a request for the R-7000 scan speed modification in this column, a letter arrived in the mail from Steve Morehouse of Fargo, North Dakota, complete with a description and pictures of the mod. Ask and you shall receive!

There is absolutely no doubt that the ICOM R-7000 is a truly unique high performance VHF-Microwave communications receiver that has no equal on today's market. As good as this receiver is, it can still stand a mod or two to increase its

performance characteristics. The one that increases the receiver's scanning speed has the following four effects:

1. Speeds up Memory-Channel scanning to 19 channels per second
2. Speeds up Program-Scanning to 33 increments per second
3. Shortens the Scan-Resume delay time (chosen with the Scan-Delay knob on the front panel). The delay step labeled "5" is now 2.5 seconds while the step labeled "15" is now 8 seconds.
4. Doubles the serial baud rate of communication with external computer devices via the CT-17 interface.

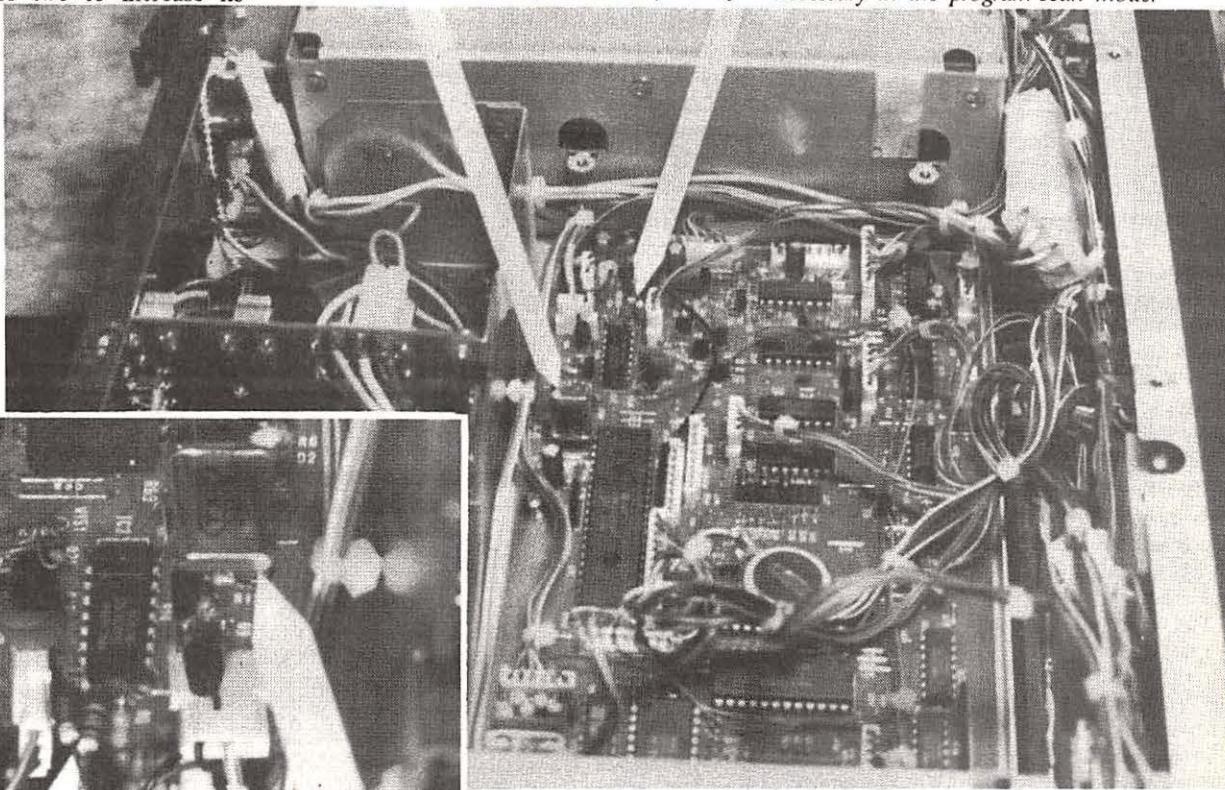
NOTE: For anyone inexperienced with working on high density circuit boards, do not, under any circumstances, attempt this modification! Neither myself nor *Monitoring Times* magazine will be responsible for any modifications or repairs attempted by

owners of products discussed in this column.

Prior Considerations

Prior to starting this modification, we need to address a few things. First, it is possible that some versions of the R-7000 might not accept a 10 MHz clock frequency. This was found to be the case in some Radio Shack PRO-2004 scanners when trying to increase its scanning speed.

Next, a Program-Scan speed of 33 increments per second is too fast for the carrier-detect circuits of the receiver to acknowledge a signal. Therefore, the Scan-Speed control on the front panel must be backed off from its maximum setting by one dial mark. This will reduce the scanning speed to approximately 25 increments per second which is well within the threshold of the carrier-detection circuits. *This is only necessary in the program-scan mode.*



As good as the ICOM R-7000 receiver is, it can still use a mod or two to increase its performance. For example, by replacing the 4.9 MHz ceramic resonator with a 10 MHz crystal we can double the clock speed for the microprocessor.

The rapid 19 channels per second scanning rate is too fast for the carrier-detect circuits whenever the IF passband filters are switched to their narrowest settings (FM-1). Therefore, the FM-1/FM-2 switch on the rear of the radio must be in the FM-2 (wide) position and jumper J-8 on the IF board should be left as it came from the factory (wide) for the AM mode, as well.

If your monitoring dictates that you must use the FM-1 (narrow) filtration, then back off the scan speed control to about 15 channels per second to ensure that the receiver will stop on an active channel. In addition, 19 channels per second is also too fast for the carrier-detect circuitry when it is forced to switch between the different frequency bands. This means that you must group together all frequencies of the same band: VHF-low, VHF-hi, UHF, etc, so the receiver has an easier job.

Due to the fact that the microprocessor clock affects the serial communications baud rate, the new baud rate is twice the value designated by the jumpers on J-17 (set at 1200 baud by the factory). This does not present a problem if your computer terminal allows 2400 baud operation, or you adjust J-17 for another baud rate or you do not use the external communications port.

Finally, the effects of this modification on options like the voice synthesizer or infrared remote control are unknown at this time. If problems occur, installing a switch to choose between the original components (and slower scanning speeds) and the modification would be one way to cope with the problem.

The Modification

The actual modification is relatively simple. The scanning speed is controlled by the Scan-Speed oscillator (adjusted by the front panel control). If the Scan-Speed oscillator frequency can be increased above 5 kHz, a scanning speed of almost 20 ch/sec can be realized.

Unfortunately, 5 kHz is outside the range of the microprocessor (IC-7). Therefore, in order to realize our goal, the operating speed of the chip must be increased. By replacing the ceramic resonator X-1 (4.9 MHz) on the Logic Board with a 10 MHz crystal we are

Monitoring Times invites you to send your modifications, homebrew projects and technical tips to Rich Arland, c/o MT, P.O. Box 98, Brasstown, NC 28902

to about 5.1 kHz.

The photo and inset show the new crystal and the two series resistors that make up this modification. The 10 MHz crystal for this mod is available from Jameco Electronics, 1355 Shoreway Road, Belmont, California 94002 (order CY-10). Resistors are available from your local Radio Shack store.

Final Comments

A couple of afterthoughts: 25 ch/sec seems to be the maximum scan speed at which the receiver can detect a carrier and stop on that frequency. The obvious question is why not gear the modification toward that speed?

The 10 MHz clock speed was chosen mainly to afford compatibility with external computer communications interfaces. The 10 MHz crystals are very common and inexpensive, therefore, it was a "natural" choice for the new microprocessor speed.

Steve reports that he has used his modified R-7000 for over four months now with no ill effects. In Steve's words: "It is truly a pleasure to see this mod in operation, with the frequency display SAILING along at speeds we EXPECT from today's high performance receivers."

Help Wanted:

That's a wrap for this month, gang. Has anyone tackled the S-Meter modification for a PRO-2004, 2005, 2021 or 2022? I have also heard from the grapevine that there are some enhancements to the PRO-2021 available to increase its frequency coverage and scan speed. Anyone have the info? If so, send it to me c/o the Brasstown address and we'll see that it gets into print for the Faithful Multitude.



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The *MT* Radio-Convention-Special:

This Handy Vertical Antenna Needs no Ground!

How many of you radio buffs out there are planning to attend the big *Monitoring Times* Radio Convention to be held in Knoxville, Tennessee, October 5, 6 and 7? It's going to be an event "not to miss" as they say, and I am certainly planning on being there. With its meetings, demonstrations, lectures and all else that will be going on, this convention will be the high point of the year for radio monitoring enthusiasts.

You can bet that the airwaves around Knoxville will be filled with useful information about the convention, too. There will be a ham "talk-in-and-information station" which hams can access and everyone can tune in to on their monitors to find out such useful information as how to get to the convention center, when convention busses leave and from where, and various other bits of knowledge that will make your stay easier and more profitable.

But how to make sure that you can monitor all the local activity from your hotel or motel room? The *MT* Convention-Special Antenna is just the ticket to supplement your rubber duck antenna on the 2-meter, since you can't mount an antenna on the roof of your hotel or motel. It should perform on the 450 MHz band, too, but at a reduced efficiency.

You can hang this antenna up or take it down just about anywhere, almost instantly. Storage is easy, too. Just coil it into a small roll and put it into your briefcase. For the hams among us, it works fine for transmitting as well. (At hand-held transceiver power levels, its SWR isn't something to write home about, but since the feedline is short, this is no problem.)

Sound like something you can use? Read on.

Let's Build the *MT* Radio-Convention-Special

1. Cut a piece of TV twinlead to 54-1/4 inches in length.
2. Measure 15-3/4 inches from one end on one conductor of the twinlead. Cut that one twinlead conductor at that point, and also at 1/2 inch farther along the twinlead (at 16-1/4 inches).

Remove the 1/2 inch chunk of cable which this creates and discard it. This leaves the twinlead with one wire 54-1/4 inches long, one conductor shortened to 15-3/4 inches and another piece beyond the 1/2 inch gap which is 38 inches as shown in Figure 1.

You will connect the coax cable to the 54-1/4 inch piece and to the 15-3/4 inch

piece, but the 38 inch length will remain unused.

3. Trim away 1/4 to 3/8 inch of insulation from the end of both the 54-1/4 inch and the 15-3/4 inch lengths as shown in Figure 1.
4. Prepare a 10 to 15 foot length of 50-ohm coaxial cable by exposing about 1/4 to 3/8 of the center conductor, and arranging the braided outer conductor as shown in Figure 1. Solder the inner conductor to the end of the 54-1/4 inch wire, and the shield to the end of the 15-3/4 inch length as shown in Figure 1.

Cover these joints with black plastic tape, making sure that they are insulated from one another.

5. Make sure that your coax has the proper plug to fit your rig attached to its other end.
6. The antenna is now ready to hang and attach to your scanner or transceiver.

Some operating tips:

Tie a nylon or other strong string to the tip of the antenna and toss the string over a convenient "hanger." Pull the antenna up and tie the string to a stable tie-point.

Don't hang the antenna near large metal objects, as this will reduce its effectiveness. If you are in a building with lots of metal which can shield the signal, try hanging the antenna so that it can "look out" of a window. Of course, the antenna can be used outdoors by hanging it from a friendly tree limb, fence post, etc., but stay well away from power lines.

AND SO, if you need a nifty little portable easy-to-mount and take-down dirt-cheap two-meter and 450 MHz antenna, build the *Monitoring Times* Convention-Special, and tune in on the action.

RADIO RIDDLES

Last Month: Last month I reported a surprising study dealing with "man as a base-fed antenna." I then pondered the question of what parts of the human body might serve as substitutes for various components of a

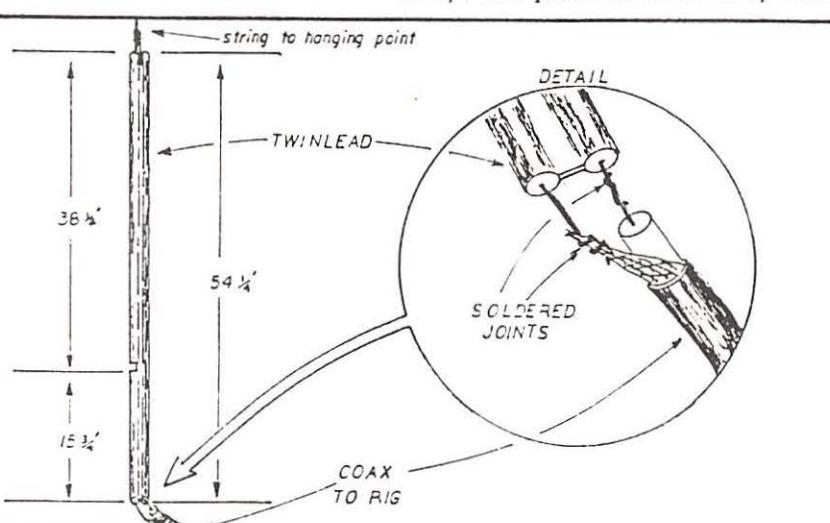


FIG. 1 A VERTICAL J-ANTENNA.

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• "Now in use in 45 countries." -Gifer Shortwave in 1983

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radio communications system. Well, believe it or not, there is a shocking number (pardon the pun) of examples of such remarkable applications of our little bodies to serve as a substitute for parts of a communications system.

First, let me digress for a moment into the animal world, as I'm sure that we've all heard of Galvani's experiments using frog's legs to show the presence of electric current. But did you know that the great Heinrich Hertz, the discoverer of the electromagnetic wave on which all our radio communications are based, attempted to use frog legs similarly to detect his electromagnetic waves?

He reported, however, that his approach: "...does not seem adapted for these purposes."¹ Later Lefevre was more successful, using frog's legs as the first "electrolytic detector."² Beccaria similarly used the leg of a cockerel.² Lefevre even used the frog leg method to detect radio time-signals from Paris: sort of an early day WWV it seems.³

But on to human physiology. Ever touch a 9-volt transistor battery to your tongue? It gives a sharp shock. Well, back in the good old days, Goldsmith and Dickey² used an apparatus which, using neither earphones or speaker, applied the electrical output of a radio receiver to the tongue of the operator, enabling that hapless soul to copy Morse code signals at "5 to 10 words per minute."

Supposedly this allowed the operator to copy code when their vision and hearing was "otherwise occupied." It is reported that a more sensitive arrangement was had if lip-to-tongue contact was used, rather than tongue only. Ouch!

Believe it or not, the great experimenter Alexander Graham Bell, the inventor of the telephone, reported hearing a musical tone on the occasion of his: "...sending an intermittent current directly through his ears..."⁴

Much later, Blake⁵ used a related technique in which two persons cooperated by each grasping one high-voltage electrode of a radio receiver's output with one hand, and placing their heads together. By pressing one ear of one person against one ear of the other person, using a thin sheet of paper to insulate between the two ears, they were, without earphones, both: "...able to hear speech or signals quite clearly."

But the "crowning" achievement in the use of human physiology as a radio

component has got to be that reported by A.F. Collins² in 1902, when he used a brain from a human cadaver to successfully detect radio waves in a spark-transmitter radio system. After this success, Collins is reported to have speculated that fear of thunderstorms might be caused by our brain's natural response in detecting the electromagnetic radiation which is caused by lightning during thunderstorms.

Well, the old timers did enjoy themselves, didn't they? But let me add a word of caution: THE ABOVE DEMONSTRATIONS CAN BE QUITE DANGEROUS -- PLEASE DON'T TRY THEM ON YOURSELF. On the other hand, it is interesting to ponder what some of the old pioneers did in this fascinating business we call "radio."

This Month: The *MT* Convention-Special Antenna featured above is based on a design called the "J" antenna, so-called because of the shape of its elements. Can you recall any other antennas named after letters of the alphabet? We'll have some for you next month. 'Til then, Peace, DX and 73.

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References:

1. Great Experiments in Physics, p 196-197.
2. V.J. Phillips, Electron and Power, May, 1981 v 27, No. 5, p 409-412.
3. G.E.C. Wedlake, SOS: The story of radio-communication, 1973, Crane, Russak and Co., New York, p 2218.
4. Alexander Graham Bell and the conquest of solitude, 1973, Little Brown and Co. p 488.
5. Blake, G.G., History of radio telegraphy and telephony, 1928, Chapman and Hall Ltd, London, p 29.



Q. I have performed the cellular restoration and scan speed increase modification to my PRO2005 scanner. Now, when I use the priority function, there is no scan-resume delay. How come? (Robert Pacyna, Toledo, OH)

A. The delay is a function of the clock speed of the microprocessor; now that you have increased that speed, you have also increased the scan-resume speed, thus reducing the delay.

Q. I tried to write to J.I.L. Corporation to get my SX200 repaired, but got no reply. Can you help? (Robert Hilton, Ft. Wayne, IN)

A. J.I.L. has moved all around the California map, from Ceritos to Gardena to Paramount. They have not offered any new products in several years. The latest address we show is J.I.L. Corporation, 15337 Minnesota Avenue, Paramount, California 90723. The phone number is (or was) 213-408-1202.

Bob's Tip of the Month:

BC200XLT BATTERY LIFE EXTENSION: Part II

Every time we run a helpful hint on a popular product, someone finds an even more helpful hint! This one disables the low battery cutoff circuit and adds several hours of operation to a single charge. Our lab unit was still going strong after seven hours straight! Uniden will provide the fix for free, but if you're in a hurry and don't mind voiding your warranty, read on!

(NOTE: This modification should not be attempted by anyone unfamiliar with small circuit board components.)

The tools: You will need a small Phillips screwdriver, fine-tip soldering iron and solder wicking braid.

The procedure: Remove the battery pack, then the two screws from the bottom spring clip. Carefully pull the rear cover off, bottom first. Remove the two small screws at the base of the circuit board. Pull the front panel away from the mainframe, bottom first.

At the bottom of the remaining board--to the left of the speaker magnet--are two blue electrolytic capacitors; just above them are two striped components--one resistor and one diode. Using the soldering iron and braid, carefully remove the two components

Q. I know that the lithium backup battery on my ICOM R71A is supposed to last at least 15-20 years, but if it does fail I will lose the programming capability even if I install a new battery. Can the battery be replaced before it fails?

A. Absolutely. Disconnect the power cord, turn the radio over on its top and remove the bottom plate screws and bottom cover. The lithium backup battery is near the center of the bottom of the radio.

Before unsoldering the old battery, plug the radio back in and turn it on; this powers up the RAM circuitry even if the battery is removed. Be sure your soldering iron is not a grounded-tip type and carefully unsolder the old battery, replacing it with the new one.

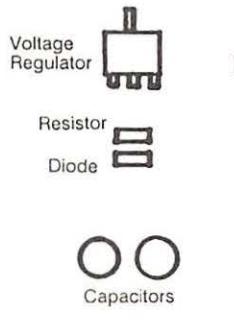
Q. Is it likely that my mobile CB will harm a scanner or shortwave radio connected to a second antenna?

A. No. A 5-watt CB radio without a linear amplifier will induce a very small voltage into

without overheating the board or damaging the copper traces.

When you reassemble the radio, be very careful to note the insertion of the front panel into the slot at the base of the volume/squelch panel. Be especially careful to align the screw holes perfectly, allowing the two rows of fine pin contacts to mate correctly with the socket. If this is not done correctly (and it probably won't be the first time!) no damage will occur, but the scanner display will be blank.

Recharge your batteries after 6-8 hours of heavy use. If the scanner dies, recharge it as soon as possible to prevent loss of your memorized frequencies.



Parts Locator

an antenna several feet away. Most, if not all, commercial receivers and scanners can withstand signals that strong.

Q. I see references to AM, WFM and NFM in scanner frequency lists. How do I know where to listen to which modes? (Graham Rankin, Bromborough, England)

A. While European frequency bandplanning is different from that in the United States, the modes for each service are usually the same as ours. There are almost no exceptions except on an experimental basis or by special authorization. Amplitude compandered sideband (ACSB) is one of those exceptions, but is rarely heard.

Land and sea two-way voice, data and paging communications between 30 and 960 MHz are narrowband FM (NFM). Aeronautical communications in the 108-137 and 225-400 MHz bands are amplitude modulation (AM). TV sound and FM broadcasting are wideband FM (WFM) because of the requirement for high fidelity and stereo.

Q. Can conventional antennas be used to receive frequencies above 1000 MHz (1 GHz)? (Todd Boyer, Philadelphia, PA).

A. Yes, but better results will be achieved by using directional gain antennas, easily designed for these short wavelengths. Parabolic dishes, long Yagis, corner reflectors, helicals, horn feeders and hardline coax are the rule.

Q. I would like to connect two identical discone antennas side by side. What length of cable should I use and how do I connect them together? (R.A. Matias, San Antonio, TX)

A. Such a configuration is unpredictably directional, with some signals adding 3 dB gain and others canceling entirely depending upon frequency and bearing. It isn't a good idea for general purpose listening.

Q. Is the "AF gain control" on my receiver the same as "RF gain" I've seen on others? (Ray McCarthy, Sag Harbor, NY)

A. No. An audio frequency gain control is

Questions or tips sent to "Ask Bob," c/o MT, are printed in this column as space permits. If you desire a reply by return mail, you must enclose a self-addressed, stamped envelope.

simply a volume control, regulating the sound amplification to the speaker. A radio frequency gain control varies the amplification of the incoming radio signal to prevent receiver overload.

Q. Are there any shortwave tuners manufactured which can be plugged into a stereo system for better audio? (Robert Lobenstein, Brooklyn, NY)

A. No; however, many general coverage receivers like Kenwood, ICOM, JRC, Yaesu and even the better portables like the Sony ICF2010 have record outputs which serve the same purpose.

Q. My shortwave portable has only a whip antenna and no provision for attaching an external antenna. Can I attach one to the whip? (L.M. Albert, Lauderhill, FL)

A. Yes, provided you have some form of preselection (tunable filtering) in between. If you simply attach a long piece of wire to the whip, strong signals will overload the radio, contributing interference to weaker stations you are trying to hear.

The best way to improve your reception is to purchase a tunable preselector like the Grove TUN-3 to use between your radio and a wire antenna, or you may wish to choose a shorter active (amplified) antenna system like the Grove "Hidden Antenna".

Since preselectors come with standard connectors, you will need to improvise the attachments of the short pieces of wires to your portable radio since it was never intended to accommodate a plug-in accessory. A short piece of wire clipped to the whip and another ("ground") running to the metal earphone jack should do the trick.

Q. Is ECSS tuning possible with an inexpensive portable like my Magnavox D2999? (Ray McCarthy, Sag Harbor, NY)

A. ECSS, which stands for exalted carrier selectable sideband, is a contrived term for zero-beat. All that is required is that a receiver be equipped with a variable BFO (beat frequency oscillator) or product detector with RIT (receiver incremental tuning) -- fine tuning.

The SSB mode is switched on while monitoring an AM station, and the resultant

whistle (beat note) is tuned lower in pitch until it totally disappears (zero beat) and the voice or music sounds natural.

The advantage of ECSS is that it requires only one sideband of the double-sideband AM signal for full audio recovery; thus, any distortion or fluctuation in signal strength which affects one sideband but not the other (selective fade), will not be heard. Additionally, if the receiver uses narrower bandwidth (sharper) filters in the SSB mode, less adjacent-channel interference is likely to be encountered.

Q. Is it true that my antenna can draw lightning to it from a mile away? (Donald Michael Choleva, Euclid, OH)

A. If the thunder cloud is a mile overhead, yes. Lightning is attracted to the closest electrical conductor which exhibits a good ground (earth return). If your antenna matches that description better than a power line, TV mast or wet tree, it is a good target.

This is why we recommend antennas be disconnected (and grounded if possible) during a lightning storm, or if your equipment is left unattended during storm season. An effective gas-discharge or MOV lightning arrestor, used with a good ground, will also provide protection from nearby strokes, but won't survive a direct hit.

Q. Years ago I could find press news in Morse code on the shortwave bands, but not any more. Where did it go? (Robert A. Sloate, Billings, MT)

A. Computer terminals, word processors and satellite links have taken over the old HF CW news press circuits. There is still some RTTY news sent on selected maritime frequencies for merchant ships and other sea-stranded interests who can't get the daily paper or watch local TV.

Unfortunately, many transmissions are in non-standard formats, uncopyable on conventional RTTY demodulators. Only about half of the RTTY-type transmissions heard on the air can be copied even with the most elaborate hobby-type digital decoders.

A comprehensive list of questions and answers regarding monitoring may be found in Bob Grove's "Scanner and Shortwave Answerbook," \$12.95 plus \$2 shipping from Grove Enterprises, P.O. Box 98, Brasstown, NC 28902.

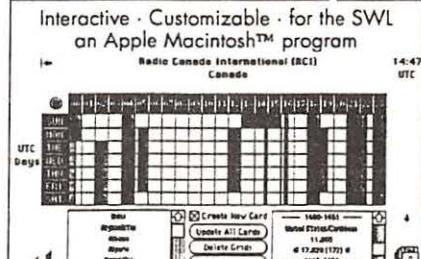
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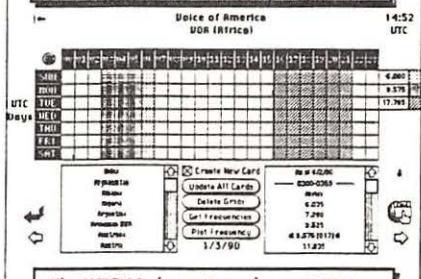
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LETTERS

continued from page 3

the U.S. Army at Camp Ames," says Bill. "I brought a Realistic DX-302 along from the States and have it hooked up to an outdoor longwire. I get good reception of the BBC, Radio Moscow, Radio Japan, Voice of America, Voice of Free China, Radio Australia, FEBC (Philippines), Radio Beijing, WSHB, Radio Austria International, Radio Thailand, Radio Canada International, the Voice of Vietnam, Radio Korea, Radio Pyongyang, and even Radio Norway.

"I also brought along an ADC SS-16 scanner but I don't have much luck with it since I am surrounded by mountains.

"Back in the States I am very active on sideband using a Galaxy Saturn/Antron 99 base station in Salina, Kansas. My calls include 2AT159, AMR007, ANDEX 6922, April 331, EC2033, 34D33, 4KP252, SSB33D, 2WW3311, WWS3641 and WWS443.

"I'll be back on the air from my home in Salina, Kansas, in September, but for now I'm cooling my heels south of the 38th parallel in the "Land of the Morning Calm" and whiling away my hours in the monitoring mode.

"I'd love to hear from any readers who would care to write. Those responding will be rewarded with a custom DX QSO certificate from South Korea.

William's address is TJFO Box 176, 501st MI BDE, APO SF 96231.

Bob Sawallesh checks in from overseas saying that "I work in the Middle East and saw a Sony XRS-2211SW in a store window. It's for the car and has two shortwave bands. Could your magazine do an article on it?"

There's an increasing amount of interest in car shortwave radios; however, in my experience, they just don't seem to work all that well. For the most part, I've been running around with a cheap portable on the dashboard. It doesn't work all that well, either, but then again, I didn't pay all that much for it, either.

The only information that I have on the XRS-2211SW is what Bill already passed along. That it is a AM-SW-cassette player combo advertised as "SW Reception in a single System Package." Medium wave (what we call "AM") is from 526.5 to 1606.5 kHz, and the shortwave bands -- which are broken up into two chunks, SW1 and SW2 -- run from 3.1 to 8 MHz and 9.3 to 15.6 MHz, respectively.

Harrison Leon Church of Lebanon, Illinois, is a fine gentleman and a licensed amateur who says that he is enjoying *Monitoring Times* more than his ham publications. "But," says Harry, "everyone at *MT* is way off in ballyhooing a cut in the

FIND THE FOLLOWING HIDDEN WORDS IN THE PUZZLE:

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ELECTRICITY	BATTERY	TRANSISTOR	CIRCUIT
CURRENT	VOLTAGE	WATTS	AMPERES
WIRES	FIELD	MAGNET	SIGNAL
POTENTIAL	ELECTRONS	POSITIVE	NEGATIVE
OSCILLATOR	OHMS	WAVELENGTH	AMPLITUDE
MODULATION	SERIES	PARALLEL	IMPEDANCE
RECTIFIER	DECIBEL	RESONANCE	CAPACITANCE
DIGITAL	REGULATOR	PHASE	CRYSTAL

standards for ham licensing." Harry is talking, of course, about the no-code license.

"When are people going to wake up and realize that we DO NOT NEED yet another grade of radio license, certainly not a codeless amateur grade?" asks Harry. "The ONLY function to be served by taking codeless licensing under the amateur umbrella is to promote no-achievers to a position of unearned and undeserved honor, while lowering the amateur fraternity to its newer, lower, common -- very common -- denominator."

"The no-code license may help to at least halt the decline in the number of new hams," says Ken Bird. But Ken feels that things have been going downhill for some time.

"There are other factors affecting amateur radio," says Ken. "The general decadence of our society is reflected in our movies, TV programs and literature. The once major pillars of our morality, the churches and schools, have long since abandoned their role as molders of our society. ...We have become a nation of amoral, self-indulgent slobs..." Ken is a licensed ham and a resident of Woodbridge, Illinois.

Robert McGowen of Milwaukee, Wisconsin, writes to say that he lives about five miles from Mitchell International Airport. "I've tried to monitor airline telephone traffic, but I've had no results. Do you think that I'm too far away, or is traffic scarce on these frequencies (454.5 MHz - 500.0 MHz)? Are these the correct frequencies?"

The frequencies used for air-to-ground radio telephone are 459.675 to 459.975 (air) and 454.675 to 454.975 (ground). You should have no trouble hearing the aircraft a hundred

miles or more away; ground stations are another thing -- you probably won't hear them more than a few miles away.

By the way, besides reading *Monitoring Times* and tuning around on the radio, Bob enjoys putting together radio puzzles. Here's one for you to figure out. We'll print the answers next month.

Barbara Hennig of Ballston, Spa, New York, is a 30 year veteran of the shortwave bands who uses a Sony '2010, a Radio Shack DX-360 and a Hanimex HR1290 to drag in signals. "I have one question about the propagation charts," says Barbara. "Should the heading read, for example, 'East Coast from Western Europe' instead of 'East Coast to Western Europe,' as it does now?"

The reason why the heads read 'from' instead of 'to' is because the program we use was designed primarily for ham radio operators who are beaming their signals to Western Europe. Fortunately, propagation works the same both ways -- you'll find that the charts are equally accurate for listening between the two locations as they are for transmitting.

Barbara closes her letter saying that "the chief reason for writing this letter is to greet all the other lady listeners out there. No, I'm not suggesting any kind of club, but I bet there's a lot of you, and here's a friendly wave to all."

April's issue was terrific," writes Jeffrey P. Miller of Austin, Texas. "I appreciated Don Moore's trip to Ecuador. I am an HCJB fan and did not know beans about the other Ecuadorians. It was well written. More of the same, please."

Sara Hatch writes from Bloomington, Indiana, on the request of a blind Baha'i who "listens" to *Monitoring Times*. Sara says that "He sent me an article dated April 1990 which shows a photo of 'the only station in the world run by the Baha'i faith.' We are not sure if you meant to say, 'the only station in Ecuador run by the Baha'i faith' or not as there are many Baha'i radio stations all over the world."

"Baha'i stations are public service facilities that are sponsored by Baha'i's in order to be of service to the people who listen to them. They have programs on health, nutrition, education, and spiritual enlightenment." The stated purpose of which is to "bring about the unity of mankind."

Thanks for bringing that to our attention, Sara. If you'd like more information on the Baha'i faith for your radio research file, a free pamphlet is available by writing to Baha'i Faith, P.O. Box 1004, Bloomington, Indiana 47401.

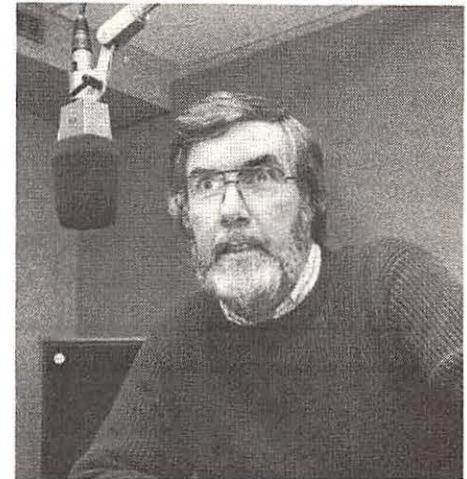
Before we go, one last thing. We have a report that Radio Sweden's popular mascot, Dancing Bear, has been relieved of his duties at the Scandinavian station. According to reports, Bear was dismissed after being seen



in an Oslo restaurant with the Radio Uganda crocodile. "He couldn't keep his paws off her," reported one witness. Officials at Swedish Telecom will neither confirm nor deny the report.

The new Radio Sweden mascot, Spring Moose (see photo, below), was formerly employed in a private zoo in Plainville, Wisconsin.

Ian McFarland, host of Radio Canada International's "Shortwave Listener's Digest Program" and president of the International



Broadcast Station Mascot's Association (INBROSTAMAAS), was reportedly "furious" when told the news. "I mean for gosh sake, what a mascot does in his off hours is his own business."

Galo, the HCJB turtle was unavailable for comment.

Thanks for all the great letters this month. We'll have to hold a few over for July. But don't let that stop *you* from writing. We enjoy hearing from everyone.

CONVENTION CALENDAR

Date	Location	Club/Contact Person	July 1	Wilkes-Barre, PA	Murgas ARC/ Robert Nygren WA3YON
Jun 1-3	Seaside, OR	NW Div Convention/ Jim Schaffer KB7ADH 7139 SW 7th Ave, Portland, OR 97219	July 7	Des Moines, IA	RD 1 Box 134-6, Sweet Valley, PA 18656
June 2	Knoxville, TN	RAC of Knoxville/ Leroy Cebik W4RNL 2414 Fair Dr, Knoxville, TN 37918	July 7	Oak Creek, WI	Des Moines RAA/ Jim Zellmer KA0VSL
June 3	Depew, NY	Lancaster ARC/ Alvin Lincoln KB2FIN 2779 Stony Point, Grand Island, NY 14072	July 7-8	Indianapolis, IN	639 40th Street, Des Moines, IA 50312
June 3	Evansville, IN	Tri-State ARS/ Martin Hensley KA9PCT 1506 S. Parker Dr, Evansville, IN 47714	July 7-8	Atlanta, GA	S. Milwaukee ARC/ Robert Kastelic WB9TIK
June 3	Manassas, VA	Ole'Virginia Hams ARC/James Lascaris WA2QEJ 12207 Woodlark Court, Manassas, VA 22111	July 8	Pittsburgh, PA	P.O. Box 102, S. Milwaukee, WI 53172-0102
June 3	Chelsea, MI	Chelsea ARC/ William Altenberndt WB8HSN 3268 Essingham, Jackson, MI 49201	July 8	Alexander, NY	Talk-in 146.580 FM simplex
June 3	Princeton, IL	Staved Rock RC/ Donal Selbrede NO9Q 1314 Creve Coeur St, LaSalle, IL 61301	July 8	Downers Grove, IL	Central Div Conv/ Cornelius Head WB9ZQE
June 3	Butler, PA	Breeze Shooters Hamfest/ H. Rey Whanger RD 2 Box 8, Cheswick, PA 15024; 412-828-9383	July 8	Old Westbury, NY	9046 Mercury Drive, Indianapolis, IN 46229
June 3	Queens, NY	Talk-in: 147.96/.36, Check in on 146.52 Hall of Science ARC/ Steve Greenbaum WB2KDG	July 15	Washington, MO	SE Div Conv/ Martin Stern KM4MG
		P.O. Box 131, Jamaica, NY 11415; 718-898-5599	July 21	Union, ME	882 Edgewater Trail NW, Atlanta, GA 30328
Jun 8-9	Albany, GA	Talk-in: 144.300 simplex; 223.6, 445.225 rpt Albany Georgia ARC/ John Crosby K4XA P.O. Box 1205, Albany, GA 31702	July 22	Van Wert, OH	North Hills ARC/ Bob Ferrey, Jr, N3DOK
Jun 8-10	Kansas City, MO	ARRL Nat'l Convention, Chuck Miller WA0KUH 7000 NE 120th, Kansas City, MO 64166	Jul 27-29	Flagstaff, AZ	9821 Presidential Ave #304, Allison Park, PA 15101
Jun 8-10	Ft Worth, TX	Ham-Com, Inc/ John Fleet WA5OHG 4348 Potomac, Dallas, TX 75205	Jul 28-31	Appleton, WI	Genesee ARC/ Don Partis WA2AV
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June 10	Willow Springs, IL	Six Meter Club/ Joseph Gutwein WA9RIJ 7109 Blackburn, Downers Grove, IL 60515			Hudson Div Conv/ Richard Moseson NW2L
June 10	Erlanger, KY	North Kentucky ARC/ John Thernes WM4T 60 Locust Ave, Covington, KY 41017			19 Linden Ave, Bloomfield, NJ 07003
June 10	Suffield, OH	Goodyear ARC/ Jim Trulko WB8EXI 2530 Sackett Ave, Cuyahoga Falls, OH 44223			Zero-Beaters ARC/ Dana Brockmiller NR0K
Jun 23-24	Claremont, NY	Electronic Fleamarket/Conrad Ekstrom WB1GXW PO Box 1076, Claremont, NH 03743			Rt 2 Box 623, Union, Missouri 63084

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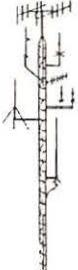
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Closing Comments

"Dit Dit"

A mere pair of "dits" conveys a lot of meaning to an experienced ham radio operator. Superficially, they're the Morse code version of "shave and a haircut -- six bits." At the end of a telegraphic contact, the first operator sends "dit di-di dit dit." The listening op replies, "dit dit."

To hams, "dit dit" can mean myriad things -- from "stand by, I'm looking for a pencil" to a shortened version of "hi hi" (the telegraphic "ha ha"). Say one operator gets a phone call. Hearing silence, the other op sends "?"--di-di dah dah di-dit. The ham on the phone casually reaches for the key and taps, "dit dit." *I'm here. No need to worry. The electricity didn't go out, I'm not having a heart attack. Dit dit. I'm still with you. You're not alone.*

Close ham radio friends often make daily or weekly "skeds," or schedules, on a certain frequency at a certain time. Pete and I kept a sked for eight years -- accompanying me through college, engagement, subsequent *dis*-engagement ("HE WASNT GUD ENUF FER U ANYWAY," Pete's key mused), a brief teaching career, and eventually to medical school -- the school where Pete served as professor of pathology.

Ham radio friendships are hard to explain to non-hams. Most are as instantaneous as the speed of radio wave transmissions themselves. Two people meet on the air, they chat, something clicks, and suddenly they can converse as though they've known each other all their lives.

Pete and I were no different. We met on the Missouri CW Net, a "network" frequency where hams pass messages for third parties via the airwaves. After the net was over, we'd chat. Early on we had self-proclaimed 3.527 MHz as "our" frequency; we met each day at 5:45 AM and at 10 PM, retreating to our on-the-air secret clubhouse to discuss work, world affairs, Mizzou basketball, and everything else. During the coldest winter nights we'd keep the "hot stove league" fired up by following the latest Cardinal baseball trades. Football Sundays were filled with Pete's boyhood recollections of the original "Monsters of the Midway," complete with the admonition, "U CANT COMPARE EM, CUZ THE FUTBALL PLAYRS PLAYED BOTH WAYS THEN."

Pete became as much a part of my daily routine as my morning coffee and my St Louis *Post-Dispatch* -- but in ways he remained an enigma. Although he was

well known for his spirited tantrums over the most inconsequential events, most people never realized that his best work was performed merely by holding up an ideal, then gently guiding someone to it.

Even though I saw Pete at school every day, we kept our on-the-air sked almost every night. It seemed we couldn't talk face-to-face about the really important things in our lives -- our stories were best told through beeps and clicks swirling through the ether and the static, insulated by a pair of radios. New problems abounded on 3.527 -- such as how to abbreviate "stratified squamous cell epithelium" so it didn't take 5 minutes to send (we settled on "STR SQ EP"). At school that professorial wall always seemed to get in the way. Pete could be my mentor, but it wasn't until we got to our "ham shacks" that he could be my best friend, and I could be his peer.

Only once did that wall come down at school. We were sitting in his office, he providing tutelage in pathology. I couldn't remember the catechism "obstruction leads to infection" in the context of lung and brain abscesses. After I tried to recall this three or four times, he snipped at me. "You wouldn't fuss at any of my classmates like that," I snarled.

"I don't give a flying flip about your classmates, Maria," he shot back. "But how do you think I'd feel if I failed to help make you the best physician you could possibly be?" He stormed to his wall, yanked down the framed Hippocratic oath, stuck it in my face, and began reading, angrily punctuating each word with a peck of his finger on the glass.

"... I will look upon him who shall have taught me this art even as one of my parents ... I will regard his offspring even as my own brethren and I will teach them this art ... I will impart this art by precept, by lecture, and by every mode of teaching, not only to my own sons but to sons of him who has taught me, and to disciples bound by covenant and oath, according to the law of medicine."

Pete glared at me with fiery yet half-hurt eyes. "My children never cared a thing about ham radio," he sputtered. "They never cared a thing about medicine. Maria, I handed the ball off to you a long damn time ago." I stomped out, madder at him than I'd ever been in my life. Five minutes later I returned to his office and asked to continue the lesson. He smiled, hung the oath back up on the wall, and proceeded.



Then, as abruptly as he came into my life he was gone, forced to keep a bigger sked -- just up and dropped dead on, of all things, his vacation.

I felt cheated that I was to serve a postsophomore fellowship in his world -- pathology -- without his guidance, his experience, and yes, even his pimping. Worse, he'd left me to race my remaining clinical years without his pearls, without the fun of hearing what "giant medical students" (or giant residents, or giant attendings) did in his day. I cried daily for weeks. I damned him for being 40 years my senior, damned myself for knowing full well this would be the script for the final page of our friendship. Yet I willingly sat at his feet and relished every tale right up to the day he died, fooling myself into believing his death was years down the road.

Mostly, though, I cried because I could never tell him what a positive force he'd been in my life. Never could look the crusty old devil in the eye and say, "A lot of good things that happened to me would never have happened if I hadn't met you on the air eight years ago." Never could express my love and appreciation for all the care and feeling he'd invested in me.

For a long time, I occasionally would get up, sit down to the rig at 5:45 AM, crank the knob to 3.527 MHz, and hear the silent hiss of an empty frequency pounding in my ears. I guess maybe I thought if there were a way to make our sked, he'd figure it out. Losing a mentor is not easy, but thank God they leave behind bits of tangible and intangible. The stethoscope Pete gave me three Christmases ago peers securely from my jacket pocket. Daily patient progress notes flow from the pen that was once his. His old anatomy book snoozes comfortably on my bookshelf.

But many times, when I'm sitting alone in a quiet corner of the hospital, if I close my eyes and listen with my heart, I can hear the best of all the gifts he left behind. Maybe it's in the tinkle of the air conditioner as the compressor kicks in. Perhaps it's in the heels of unseen shoes clip-clipping down the hall, or in the rhythmic squeak-squeak of a laundry cart as it hobbles along on a bad wheel.

Dit dit.

Maria L. Evans
Columbia, Mo.

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